THE
NATURAL HISTORY
OF
ANIMALS, VEGETABLES,
MINERALS. &c.

1570/6080

BL

THE NATURAL HISTORY OF ANIMALS, VEGETABLES, AND MINERALS;

WITH

The THEORY of the EARTH in general.

Tranſlated from the FRENCH

Of COUNT de BUFFON.

Intendant of the Royal Gardens in France; Member of the French Academy, of the Academy of Sciences, and of the Royal Societies of London Berlin, &c.

By W. KENRICK, L.L.D. and J. MURDOCH.

VOL. I.

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PREFACE.

THE contemplation of the objects of *Natural Hiſtory*, tends ſo greatly to enlarge and improve the mind, that its ſtudy hath been recommended by the wiſe and learned of all ages, as equally uſeful to individuals and beneficial to the public. So cultivated, indeed, hath been this captivating *Science* in modern times, that we have ſeen it ſucceſſively admired as the hand-maid, and miſtreſs of the *Arts*. Of the writers, who have moſt contributed to its preſent flouriſhing ſtate, the celebrated De BUFFON ſtands in the firſt place. To *Willoughby*, *Ray*, *Klein*, *Linnæus*, and others, the world is indebted for claſſical arrangements of animal, vegetable,

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getable, and foſſil productions. By theſe writers, however, the reader is preſented with a dry, unentertaining theory of their characteriſtic peculiarities and nominal diſtinctions, with little regard to their inſtincts, habits, properties and uſes; circumſtances that conſtitute the moſt intereſting and inſtructive part of natural knowledge ---To ſupply theſe important *deſiderata*, and to give a complete ſyſtem, as well practical as theoretical, of the animal, vegetable, and mineral kingdoms, was the arduous taſk of DE BUFFON; in the execution of which he is univerſally allowed to have ſo eminently ſucceeded, that the works of ſubſequent naturaliſts ſeem little more than abſtracts from thoſe of this original writer.---The mutilations to which ſuch abſtracts are neceſſarily liable, have of courſe occaſioned ſo many miſapprehenſions, that an Engliſh tranſlation of DE BUFFON's work has long been deſired by the lovers of Natural Hiſtory in this country. It is to gratify this deſire that the preſent tranſlation is reſpectfully offered to the public.

After

After obſerving that the verſion was made from the Octavo Edition of the original, printed at Paris in the year 1769, it would be ſubmitted, without farther preface, to the public candour, were not ſome apology neceſſary for departing from the order, in which the matter was originally diſpoſed. M. DE BUFFON begins his work with a diſcourſe on the manner of ſtudying and treating Natural Hiſtory ſcientifically. This diſcourſe is followed by another, containing a general theory of the Earth; to which are annexed the ſeveral ſyſtems of Whiſton, Burnet, Woodward and others. The only reaſon the author gives for this diſpoſition, is that the general Hiſtory of the Earth ought to precede the particular hiſtory of its productions. But as the deſcription of particular objects is more intelligible and obvious than the inveſtigation of general theorems, it was conceived it might be more agreeable to the majority of readers, to begin with the practical obſervations on things, and thence to proceed gradually to theoretical diſſertations and general ſyſtems.

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It may be ſuppoſed that, on this plan, the nature of *foſſils* ſhould have been the firſt, as the moſt ſimple object; but as M. DE BUFFON juſtly obſerves, the *Animal* World takes the lead in point of importance; and as of all animals *Man* hath the pre-eminence, this work commences accordingly with the Author's tract on that ſubject.

THE NATURAL HISTORY OF MAN.

CHAP. I.

Of the Nature of Man.

THOUGH it is so much our interest to acquire an exact and thorough knowledge of ourselves, yet I do not know if we are not less acquainted with the human, than with any other existence. Provided by nature with organs, calculated solely for our preservation, we never employ those organs but to receive foreign impressions; our only study is, to acquire a familiarity with external objects, and to exist out of ourselves. Too intent on multiplying the functions of our senses, and on enlarging the external bounds of our being, rarely do we make any use of that internal sense which reduces us to our true dimensions, and which abstracts from us whatever does not constitute a part of ourselves. It is by an exertion of this sense alone, however, that we can form a proper judgment of ourselves. But how shall it receive its full activity and extent? How shall the soul, in which it resides, be disengaged from all the illusions of the mind? Having lost the

habit of employing it, it has remained inactive amidſt the tumult of our corporeal ſenſations; it has been, as it were, dried up by the fire of our paſſions; the heart, the mind, the ſenſes, have all co-operated againſt it.

Unalterable in its ſubſtance, and impaſſible by its eſſence, it ſtill, however, continues the ſame. The ſplendor of its light has been overcaſt, but its power has not been diminiſhed. It is leſs luminous; but its guidance is not the leſs certain. Let us then collect thoſe rays, of which we are not yet deprived. The obſcurity with which we are ſurrounded will decreaſe; and though the road may not be every where equally filled with light, we yet ſhall have a torch that will prevent us from going aſtray.

The firſt, and indeed the moſt difficult ſtep, which leads to the knowledge of ourſelves, is, a diſtinct conception of the nature of the two ſubſtances that conſtitute our being. To ſay ſimply, that the one is unextended, immaterial, and immortal; and that the other is extended, material, and mortal, is only to deny of one thing, what we affirm of another. What knowledge is to be acquired from this mode of negation? Such privative expreſſions can exhibit no real and poſitive idea; but to ſay, that we are certain of the exiſtence of the former, and that the exiſtence of the latter is leſs evident; that the ſubſtance of the one is ſimple, indiviſible, and of one form, ſince it only manifeſts itſelf by a ſingle modification, which is thought; that the other is leſs a ſubſtance than a ſubject, capable of receiving different forms, which bear a relation to thoſe of our ſenſes, but all as uncertain, all as variable, as the nature of the organs themſelves: This is to ſay ſomething; it is to aſcribe to each ſuch diſtinct and poſitive properties, as may lead us to an elemental knowledge of both, and to a compariſon between them.

From

From the ſmalleſt reflection on the origin of our knowledge, it is eaſy, indeed, to perceive, that by compariſon alone, we can acquire it. What is abſolutely incomparable, is utterly incomprehenſible: of this, God is the only inſtance we can adduce; he exceeds all comprehenſion becauſe he is above all compariſon. But whatever is capable of being compared, whatever we can contemplate in different lights, whatever we can conſider relatively, may always be concluded to come within the ſphere of our underſtanding. The more ſubjects of compariſon, the more different views, or particular appearances, we have for examining any object, the more methods there are for obtaining a knowledge of it, and the greater facility there is to combine thoſe ideas which ought to direct our judgment.

The exiſtence of the ſoul is demonſtrated to us; or rather that exiſtence and ourſelves form but one and the ſame thing. To be and to think, are with us identical. This truth is within us, and it is more than intuitive; it is independent of our ſenſes, of our imagination, of our memory, and of all our other relative faculties. The exiſtence of our body, and of other external objects, is held in uncertainty by every unprejudiced reaſoner; for what is that extenſion of length, breadth, and depth, which we call our body, and which ſeems to be ſo much our own, but as it relates to our ſenſes? What are even the material organs of thoſe ſenſes, but ſo many conformities with what affects them? And, with regard to our internal ſenſe, our ſoul, has it any thing ſimilar, any thing in common, with the nature of theſe external organs? Does the ſenſation excited in our ſoul by light or ſound, reſemble that tenuous matter, which ſeems to diffuſe light, or even that tremulous undulation, which ſound produces in the air? Our eyes and our ears have every neceſſary conformity with theſe matters, becauſe thoſe organs and mat-

matter itſelf, are, in effect, of the ſame nature. The ſenſation, however, which the ſoul experiences, has nothing ſimilar, nothing analogous to it; and is not this a ſufficient proof, that the nature of the ſoul is in reality different from that of matter?

It is a certain truth, then, that the internal ſenſation is altogether different from its cauſe; as alſo, that, if there are things which exiſt without us, they are in themſelves totally different from what we conceive them to be. As the ſenſation therefore, bears no kind of reſemblance to the thing which is the cauſe of it; does it not follow, that what excites our ſenſations is neceſſarily, and of its own nature, quite another thing than we imagine it? The extenſion which we perceive by our eyes, the impenetrability, of which we receive an idea by the touch, all thoſe qualities, whoſe various combinations conſtitute matter, are of a doubtful exiſtence; ſince our inward ſenſation, and what it repreſents to us as extenſion, impenetrability, &c. are no wiſe extended or impenetrable, and have not even the ſmalleſt affinity with thoſe qualities.

If it is obſerved, that the ſoul is often affected with ſenſations, during ſleep, and the abſence of every object; and that theſe ſenſations are ſometimes very different from thoſe, which it has experienced by the preſence of the ſame objects, through the channel of the ſenſes; does it not lead to a belief, that this preſence of objects is not neceſſary to the exiſtence of our ſenſations; and that, of conſequence, our ſoul and we may exiſt ſingly, and independently of thoſe objects? During ſleep, and after death, for example, our body exiſts; it has even all that kind of exiſtence of which it is ſuſceptible, and is the ſame as it was before; yet the ſoul no longer perceives this exiſtence of the body; it has ceaſed to be with regard to us. The queſtion is, therefore, whether a thing, which can exiſt, and

after-

afterwards not exiſt; whether a thing, which affects us in a manner altogether different from what it is, or what it has been, may yet be a reality of indubitable exiſtence.

That ſomething exiſts without us, we may believe, though not with a poſitive aſſurance; whereas of the real exiſtence of every thing within us, we have a certainty. That of our ſoul, therefore, is inconteſtable, and that of our body ſeems doubtful; becauſe matter may be only a mode of the ſoul, one of its methods of perception. Our ſoul perceives by this method, when we are awake; it perceives by another method, when we are aſleep; after death, it will perceive by a method far more different ſtill: and, whatever is, in the preſent ſtate, the cauſe of its ſenſations, matter in general, may well ceaſe to exiſt, with reſpect to it, when all communication with its own body is cut off.

But let us admit this exiſtence of matter; let us, though it is impoſſible to demonſtrate it, adopt the common opinion, and ſay, that it even exiſts as it appears to our ſenſes, by comparing the ſoul with any material object, we ſhall then find differences ſo great, and contrarieties ſo ſtrongly-marked, that every doubt will inſtantly vaniſh of its being of a nature totally different, and of an order infinitely ſuperior.

Our ſoul has but one form, which is very ſimple, very general, and very permanent. Thought is this form; otherwiſe than by thought, it is impoſſible for us to perceive the ſoul. This form has nothing in it of diviſion or extenſion, nothing of impenetrability, or matter; of conſequence, therefore, our ſoul, the ſubject of this form, is indiviſible, and immaterial. Our body on the contrary, and all other bodies, have many forms. Every one of theſe is compounded, diviſible, variable, periſhable, and has a relation to the different organs, through which

we

we perceive them. Our body, therefore, and things material, having nothing permanent, nothing real, nothing general, by which we may fix our reſearches, and attain a certain knowledge of them. A blind man has no idea of that part of a material object, which repreſents to us the forms of bodies; a leper, whoſe ſkin has loſt the ſenſe of feeling, is denied all the ideas which ariſe from the touch; and a deaf man has no knowledge of ſounds. Let theſe three modes of ſenſation be ſucceſſively deſtroyed, in a man whom nature has provided with them, and the ſoul will exiſt in its wonted vigour; its internal functions will ſubſiſt, and thought will ſtill manifeſt itſelf within him. On the other hand, diveſt matter of all its qualities; ſtrip it of colour, of extent, of ſolidity, and of every other property which has any relation to our ſenſes; and the conſequence will be its annihilation. Our ſoul, therefore, is unperiſhable, but matter may, and will periſh.

Thus it is with all the other faculties of our ſoul, compared with thoſe of our body, and with the moſt eſſential properties of any kind of matter. As the ſoul wills and commands, ſo the body obeys in every thing within its power. The ſoul forms, at pleaſure, an intimate union with any object: neither diſtance, nor magnitude, nor figure, can obſtruct this union when the ſoul inclines to it; it is effected, and effected in an inſtant. The body can form no union: whatever touches it too cloſely injures it; it requires a long time in order to approach another body; it every where meets with ſome reſiſtance, with ſome obſtacle; from the ſmalleſt ſhock, its motion ceaſes. Is will then nothing more than a corporeal movement; and is contemplation but a ſimple contact? How could this contact take place upon a remote object, upon an abſtracted ſubject? How could this movement be accompliſhed in an indiviſible inſtant? Is it poſſible to have a conception of motion, without having

ving a conception of ſpace, and of time? Will, therefore, if it be a motion, is not a material one; and if the union of the ſoul to a particular object be a touch, a contact, is not this touch effected at a diſtance; is not this contact a penetration; qualities which are abſolutely oppoſite to thoſe of matter, and which of conſequence cannot belong to an immaterial being?

But I fear I have already dwelt too long on a ſubject, which by many will perhaps be conſidered as foreign to our purpoſe. "Ought Conſiderations on the Soul to find a place in a ſyſtem of Natural Hiſtory?" Were I conſcious of abilities equal to the diſcuſſion of a topic ſo exalted, this reflection I muſt own, would have little weight with me; and if I have contracted my thoughts, it is only becauſe I was afraid I ſhould not be able to comprehend a ſubject ſo enlarged, and ſo important, in its full extent. Why, after all, retrench from the Natural Hiſtory of Man, the hiſtory of the nobleſt part of his being? Why thus prepoſterouſly debaſe him, and, as it were, force us to conſider him merely as an animal; while in reality, he is of a nature ſo different and diſtinguiſhed, ſo ſuperior to that of the brutes, that he who confounds them muſt be immerſed in ignorance as themſelves?

It cannot be denied, that man, as to the material part of his exiſtence, bears a reſemblance to the animal creation; and that, if comprehended in the circle of natural beings, there is a neceſſity for placing him in the claſs of animals. Nature, however, has neither claſſes nor ſpecies; it contains only individuals. Theſe ſpecies and claſſes are nothing but ideas which we have ourſelves formed and eſtabliſhed: and by putting man in one of ſuch claſſes, we do not change the reality of his being; we do not derogate from his dignity; we do not alter his condition. In a word, the ſuperiority of the human

nature,

nature, over the nature of brutes, ſhines with the ſame luſtre; we only place man with what has the greateſt ſimilitude to him, while even thus, we allow the material part of his being the firſt rank.

In comparing man with an animal, we find in both a body, an organiſed ſubſtance, ſenſes, fleſh, blood, motion, and a multitude of other reſemblances. But theſe reſemblances, are all external, and not ſufficient to juſtify a deciſion, that the human and the animal natures are ſimilar. In order to form a proper judgment of the nature of each, we ought to have as diſtinct a knowledge of the internal qualities of an animal, as we have of our own. As the knowledge, however, of what paſſes within an animal is impoſſible to be attained; as we know not of what order and kind its ſenſations may be, in relation to thoſe of man; we can judge ſolely from a compariſon of the effects of the natural operations of both.

Let us, then, take a view of theſe effects; and, while we admit of all the particular reſemblances, limit our inveſtigation to the moſt general differences. It will be allowed, that the moſt ſtupid man is able to manage the moſt acute animal: he governs it, and renders it ſubſervient to his purpoſes; and this, not ſo much on account of his ſtrength or ſkill, as of the ſuperiority of his nature, and of his having a rational ſcheme, ſyſtem of action, and method by which he compels the animal to obey him. We do not find, that the ſtrongeſt and moſt expert animals give law to the others, and hold them in ſervitude. The ſtronger, it is true, devour the weaker; but this action implies no more than an urgent neceſſity, or a rage of appetite; a quality very different from that which is capable of producing a ſeries of actions, all tending to the ſame end. Did animals enjoy this faculty, ſhould we not ſee ſome of them aſſume dominion over others, and oblige them

them to furniſh them with food, to watch over them, and to attend them when ſick or wounded? Now, throughout the creation of animals, there is no veſtige of any ſuch ſubordination; no appearance, that one of them knows, or is ſenſible of, the ſuperiority of his own nature over that of others. It follows, then, that they muſt be all conſidered as of one nature; as alſo, that the nature of man is not only highly ſuperior to that of any animal, but alſo entirely different from it.

Man, by an outward ſign, indicates what paſſes within him; he communicates his ſentiments by ſpeech, which is a ſign common to the whole human ſpecies. The ſavage and the civilized man have the ſame power of utterance; they both ſpeak naturally, and ſpeak ſo as to be underſtood. No animal is endowed with this expreſſion of thought; nor is it a defect owing, as is commonly imagined, to the want of proper organs. Anatomiſts have found the tongue of an ape to be as perfect as that of a man. The ape, therefore, if it had thought, it would have ſpeech; and if its thoughts had aught analogous to ours, this ſpeech would have an analogy to ours alſo. Suppoſing its thoughts were only the thoughts of an ape, it ſtill would hold ſome kind of diſcourſe with other apes; a circumſtance, of which we ſhould certainly have heard, had it been endowed with the powers of utterance. So far, then, is the ape from having any thought like ours, that it has not even any order or ſeries of thoughts of its own. Nothing regular, nothing connected, paſſes within it; for as it expreſſes nothing by combined and ſettled ſigns, ſo it is, of conſequence, void of thought, even in the loweſt degree.

So true is it, that it is from no organical defect, animals are denied the gift of ſpeech, that we know ſeveral ſpecies of them which may be taught to pronounce words, and even to repeat ſentences of ſome

length. Perhaps, were we to take the trouble to teach them, many others might be found capable of articulating particular ſounds;* but to make them conceive the idea which ſuch ſounds denote, is an impracticable taſk. They ſeem to repeat, and even to articulate them, merely as an echo, or an artificial machine, would repeat or articulate. It is not in the mechanical powers, or the material organs, but in the intellectual faculty, in thought, that they are deficient.

As all language ſuppoſes a chain of thought, it is on this account that animals have none; for, even allowing ſomething in them which reſembles our firſt apprehenſions, our moſt groſs and mechanical ſenſations, they ſtill will be found incapable of forming that aſſociation of ideas, which can alone produce reflection; and in this, be it remarked, conſiſts the eſſence of thought. To this inability of connecting ideas, it is owing, that they are deſtitute of thought and ſpeech; as alſo, that they can neither invent nor improve any thing. Were they endowed with the power of reflection, even in the moſt ſubordinate degree, they would be capable of making ſome kind of proficiency, and would acquire more induſtry: the modern beaver would build with more art and ſolidity than the ancient; and the bee would daily be adding new improvements to its cell. If this cell we ſuppoſe as perfect already as it can be, we aſcribe to the inſect an intelligence ſuperior to our own; an intelligence whereby it could diſcern at once the laſt degree of perfection to which its work might be carried; while we ourſelves are for ever in the dark as to this degree, and ſtand in need of much reflection, time, and practice, in order to perfect even one of our moſt trivial arts.

* Leibnitz mentions a dog which had been taught to pronounce ſeveral German and French words.

Whence

Whence can arise that uniformity we observe in all the works of animals? Why does each species invariably perform the same actions in the same manner? And why does not one individual perform them better or worse than another? Can there be a stronger proof that their operations are merely the effects of mechanism and materiality; evidently as it follows, that if they possessed the smallest spark of that light which is inherent in us, their works would display variety at least, if they did not display perfection; and that one individual of the same species would, in some of its performances, do something a little different from what another had done? But this is far from being the case. One plan of action is common to the whole species; and whoever would attribute a soul to animals, must of necessity, allow but one to each species. Of this soul each individual would be an equal partaker; and as thereby it would be divisible, it would consequently be material, and of a nature widely different from ours.

Why, on the other hand, are our productions and performances so various and so diversified? Why is a servile imitation more troublesome to us than an original design? It is because our soul is our own; because it is independent on that of another; because we have nothing in common with our species, but the substance of our body; and because, in effect, our resemblance to animals is confined to the lowest of our faculties.

Were internal sensations annexed to matter, and dependent on the corporeal organs, should we not see as remarkable differences in the works of animals of the same species, as in those of men? Would not those which were the most happily organized, build their nests, contrive their cells, or lay their eggs, in a manner more solid, more elegant, and more commodious? And would not some individual, possessed of a superior genius, take an opportunity to manifest that superiority in this very mode? Now, nothing of this kind has

has ever happened; and therefore the corporeal organs, however perfect or imperfect, have no influence on the nature of the internal ſenſations. Hence may we not conclude, that animals have no ſenſations of this kind; that ſuch ſenſations have no connection with matter, no dependance, in their nature, on the corporeal organs; and, that of conſequence, there muſt be a ſubſtance within us, different from matter, which is at once the ſubject and the cauſe that produces and receives thoſe ſenſations?

But theſe proofs of the immateriality of the ſoul may be carried farther ſtill. In all the works of nature, there are imperceptible gradations maintained. This truth, which in no other inſtance admits of exception, is here expreſſly contradicted: between the faculties of man, and thoſe of the moſt perfect animal, the diſtance is infinite; an evident proof, that man is of a different nature, and that of himſelf he forms a diſtinct claſs, between which and that of animals, there is an immenſe chaſm. If man belonged to the claſs of animals, there would be a certain number of beings in nature leſs perfect than the former, and more perfect than the latter, in order to compleat the gradation from man to the monkey. But this is not the caſe; the tranſition is immediate from the thinking being to the material being; from intellectual power to mechanical force; from order and deſign to blind motion; from reflection to appetite.

To the ingenuous enquirer after truth more than enough has been here advanced, as demonſtrative of the excellency of our nature, and of the immenſe diſtance which the Creator has placed between man and the brute. The former is a rational being, the latter a being devoid of reaſon. And as there is no medium between the poſitive and the negative; as there are no intermediate beings betwen the rational being, and the being devoid of reaſon; it is evident, that man is of a nature entirely different from that of the

the animal; that all the resemblance he bears to it is merely external; and that to judge of him by this resemblance, is to allow ourselves to be deceived by appearance, and wilfully to shut our eyes against that light, by which we ought to distinguish it from reality.

Having thus considered man as to his internal properties, we shall now proceed to examine his external ones, and to give the history of his body. After taking a view of the different stages of his life, we shall conduct him to the period when he must be separated from that body, and then resign him to the common mass of matter to which he belongs.

CHAP. II.

Of Infancy.

IF any thing can give us an idea of imbecillity, it is the condition in which we are found on our first entrance into the world. Incapable as yet of making any use of its organs, or its senses, the infant just born is in want of every assistance. It is an image of pain and of misery; it is more helpless than any animal; it seems as if it were ready every minute to finish its doubtful and precarious life; it can neither move nor support itself; hardly has it strength enough to announce, by its cries, the sufferings it experiences: as if nature chose to apprise it, that it was born to suffer, and that it has not obtained a place in the human species, but in order to partake of its infirmities, and of its sorrows.

Let us not disdain to turn our eyes on a state through which we have all passed: let us view ourselves in the cradle; let us enquire by what degrees this delicate machine, this new-born, and hardly existing body, comes to receive motion, consistency, and strength.

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The infant, at its birth, may be ſaid to come from one element into another. On emerging from its watery reſidence in the womb, it becomes expoſed to the air, and inſtantly experiences the impreſſions of that active fluid. The air acts upon the olfactory nerves, and upon the organs of reſpiration, and thereby produces a ſhock, a kind of ſternutation which expands the breaſt, and allows the air a paſſage into the lungs: of theſe it dilates and ſwells the veſicles, and becomes warmed and rarefied to a certain degree; after which, the ſpring of the fibres, thus dilated, re-acts upon this light fluid, and cauſes it to iſſue from the lungs. Inſtead of undertaking to explain the cauſes of the alternate and continual action of reſpiration, we ſhall confine ourſelves in this place to an elucidation of its effects. This function is eſſential to man, and to ſeveral ſpecies of animals. It is by reſpiration that life is preſerved; and as, when it ceaſes, the animal periſhes, ſo when it is once begun, it cannot terminate till death. Yet there is reaſon to believe, that the navel is not cloſed immediately at the birth; and that, of conſequence, a part of the blood may continue to paſs through that aperture. All the blood cannot, therefore, have a communication to the lungs; and it is probable, a newborn child might ſuſtain a privation of air for a conſiderable time, without thereby loſing its exiſtence.

Of at leaſt the poſſibility of this, I once ſeemingly brought a proof by an experiment. I put a pregnant bitch, of the large greyhound ſpecies, into a tub, filled with warm water; where after faſtening her in ſuch a manner, that the lower parts were covered with the water, ſhe brought forth three puppies, which were accordingly received into a liquid as warm as that they had left. On being waſhed in this water, I removed the puppies, though without giving them time to breathe, into a ſmaller tub, filled with warm milk; in order that they might, if neceſſary, receive nouriſhment. In this

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milk they were kept above half an hour; when, after taking them out one by one, they were all found alive. They now began to breathe, and to discharge some moisture from the throat; and having allowed them respiration for half an hour, I again put them into the milk, which in the mean time, had been restored to a proper warmth. There I left them a second half hour; at the expiration of which, two of them were taken out vigorous, and seemingly no wise incommoded by the privation of air, though the third rather appeared in a languishing state. Instead of subjecting this one to another trial, I caused it to be carried to the mother; which had by this time produced, in the natural way, six other puppies; and thought it had been brought forth in water, and had lived in milk, one half hour before, and another after, it had breathed, it yet received so little injury from the experiment, that it presently recovered with its mother, and continued strong and lively as the rest of the litter. After allowing the other two about an hour to breathe, I put them once more into the warm milk. Whether they swallowed any of this liquid or not, is uncertain; but they remained in it half an hour, and on being taken out, appeared nearly as vigorous as ever. After being carried to the mother, however, one died the same day; but whether by accident, or by what it had suffered while immersed in the liquid, and deprived of air, I could not learn. The other lived, as well as the first one; and both throve equally with those which had not gone through the same trials. This experiment I never carried farther; but I saw enough to convince me, that respiration is less necessary to a new-born, than to a grown animal; and that it might be possible, with proper precautions, to prevent in this manner, the navel from being closed, and thus produce excellent divers, and different kinds of amphibious animals, which might live equally in air and in water.

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The air, on its first admission into the lungs, generally meets with some obstacle, occasioned by the liquid, which has has been collected in the tracheal-artery. This obstacle is more or less great, in proportion as the liquid is more or less viscous. At its birth, however, the infant raises its head, which before inclined over its breast, and by this movement, the canal of the tracheal-artery is enlarged; the air obtains a place in this canal; the liquid is forced into the lungs; and by dilating the bronchia, it distributes over their coats the mucous substance which opposed its passage. The superfluity of this moisture is presently dried up by the renewal of the air; or, if the infant is incommoded by it, it coughs, and at length relieves itself by expectoration, which, as it has not yet the strength to spit, is seen to flow from the mouth.

As we remember nothing of what happened to us at this period, it is hardly possible to determine what sentiment the impression of air produces in a new-born infant. Its cries, however, the instant it first draws breath, are pretty certain signs of the pain it feels from the action of the air. Till the moment of its birth, indeed, the infant is accustomed to the mild warmth of a smooth liquid; and we may suppose, that the action of a fluid, whose temperature is unequal, gives too violent a shock to the delicate fibres of its body. By warmth and by cold it seems to be equally affected: in every situation it complains; and pain appears to be its first, its only sensation.

For some days after they are brought into the world, most animals have their eyes closed. The infant opens them the moment of its birth; but they are fixed and dull; they want that lustre which they afterwards acquire; and when they move, it is rather an accidental roll, than an act of vision. Though light makes an impression upon the new-born infant, (as the pupil of the eye which

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is already the eighteenth or twenty-fourth part of an inch in diameter, is ſeen to dilate or contract, in proportion to the quantity it receives) yet it is incapable of diſtinguiſhing objects. The organ is ſtill imperfect; the *tunica cornea*, or horny tunicle is wrinkled; and perhaps the retina is alſo too ſoft to admit the images of objects, and give the ſenſe of ſeeing.

The ſame remark ſeems to be equally applicable to the other ſenſes: they do not yet receive that conſiſtency which is neceſſary to their operations; and even when they have received it, a long time muſt elapſe before the ſenſations of the infant can be juſt and compleat. The ſenſes are ſo many inſtruments which we muſt learn to employ. Of theſe ſight, which ſeems to be the nobleſt and the moſt admirable, is, at the ſame time, the moſt uncertain, and the moſt deluſive; and were its defects not corrected by the teſtimony of the touch, we ſhould be every minute miſled. This laſt, is the ſolid ſenſe; it is the ſenſe which is the meaſure and criterion of all the others; the ſenſe which is alone abſolutely eſſential to an animal, and which is alone diffuſed univerſally over its body. Yet, in an infant juſt born, even this perception is imperfect. By its cries, indeed, it gives indications of pain; but it has no expreſſion to denote pleaſure. It is not till after forty days, that it begins to ſmile; nor is it till then alſo that it begins to weep; its former expreſſions of uneaſineſs or pain being unaccompanied with tears. On the countenance of a new-born infant, then there appears no veſtige of the paſſions; nor have the features of the face even obtained that conſiſtence and form, which are neceſſary for this mode of expreſſing the ſentiments of the ſoul. All the other parts of its body are alike feeble and delicate: its motions are unſteady and uncertain; it is unable to ſtand upright; its legs and thighs are ſtill bent, from the habit it contracted in the womb; it has

not ſtrength enough to ſtretch forth its arms, or to graſp any thing with its hands; and, if abandoned, it would remain ſtretched upon its back, without being able to turn itſelf.

By reflecting on theſe things, it appears, that the pain which the infant feels on its firſt entrance into the world, and which it expreſſes by cries, is a ſenſation merely corporeal, and ſimilar to that of animals, who alſo cry the minute they are brought forth; as alſo, that the ſenſations of the ſoul do not begin to manifeſt themſelves till forty days have elapſed; ſmiling and weeping being produced by two internal ſenſations, which both depend on the action of the ſoul. The former is the effect of an agreeable emotion, which can only ariſe from the ſight, or remembrance, of an object known, beloved, and deſired; the latter is that of a diſagreeable impreſſion, compounded of ſympathy with others, and of concern for ourſelves; and both imply a certain knowledge, as well as an ability to compare, and to reflect. Smiling and weeping, therefore, are ſigns peculiar to the human ſpecies, for expreſſing mental pleaſure or pain; while cries, and the other ſigns of bodily pain and pleaſure, are common to man, and to the greateſt part of the animal creation.

But let us return to the material arts and affections of the body. The ſize of an infant born at the full time, is uſually about twenty-one inches; yet there are others that are ſmaller, and others ſtill that do not even exceed fourteen inches, though alſo born at the fulltime; ſome, on the contrary, there are, that exceed twenty-one inches. In children of twenty-one inches, the breaſt, meaſured by the length of the ſternum, is nearly three inches; and in thoſe of fourteen, only two inches. At nine months, the fœtus generally weighs twelve, and in ſome inſtances, fourteen pounds. The head of a new-born infant is larger, in proportion, than the reſt of the body; but this

this diſproportion, which was ſtill greater during the firſt ſtage of the fœtus, gradually wears off. Its ſkin is very ſoft; and from its tranſparency, by which the blood beneath appears, it is alſo of a reddiſh caſt. It is even pretended, that the complexions of thoſe children whoſe ſkins are the moſt red, will afterwards be the faireſt, and the moſt beautiful.

The form of the body, and of the members of a new-born infant, is by no means perfect: all the parts are too round; they even ſeem ſwelled when the child is well, and in good plight. At the end of three days, there generally appears a kind of jaundice; and at this time there is generally milk in the breaſt of the infant, which is ſqueezed out with the fingers. After this, the ſuperfluity of the juices, and the ſwelling of the different parts of the body, diminiſh by degrees, as the child by degrees increaſes in growth.

In ſome children juſt born, the brain-pan is obſerved to palpitate; and in all, by applying the hand to it, the action of the ſinuſes, or arteries of the brain may be felt. Over this aperture is formed a kind of cruſt or ſcurf, which is ſometimes very thick, and which, in order to reduce it, muſt be rubbed with bruſhes in proportion as it hardens. The matter thus formed over the opening of the ſkull ſeems to have ſome analogy with that of the horns of animals; which alſo derive their origin from an aperture of the ſkull, and from the ſubſtance of the brain. In another place we ſhall take an opportunity to ſhew, that all the extremities of the nerves become ſolid by being expoſed to the air; and that it is this nervous ſubſtance which produces claws, ſpurs, horns, &c.

The fluid contained in the amnion leaves a viſcous, whitiſh humour upon the infant; a humour which is ſometimes ſo adheſive, that it muſt be dilu-

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ted with ſome mild liquid before it can be removed. In this country, we have the prudent precaution never to bathe the infant but in warm water; yet there are whole nations, in climates too much more ſevere than ours, that plunge their children into cold water, the minute they are born, without their feeling any inconvenience from it. The Laplanders are even ſaid to leave their infants in ſnow, till by cold the very reſpiration is ſtopped, and then plunge them into a bath of warm water. Nor is it in the hour of their birth only, they are treated thus roughly: thrice every day, during the firſt year, and as often every week, during the ſubſequent ones, do they undergo an immerſion in cold water. The people of the North are perſuaded, that the practice of cold-bathing renders men more ſtrong and robuſt; and it is for this reaſon they forcibly enure their progeny to it betimes. The truth is, we are not ſufficiently acquainted with the extent of what our body is capable of ſuffering, acquiring, or loſing by habit. The Indians in the iſthmus of America, for example, receive no injury from plunging into cold water, when in a ſweat: as the moſt ſpeedy remedy for intoxication, the women throw them into it when drunk; and the minute after delivery, mothers ſcruple not to bathe in it with their infants. Dangerous as we ſhould conſider this laſt practice, theſe women are, however, rarely known to die in labour; whereas, with us, numbers periſh thus every day.

A few minutes after its birth, the infant makes water; and this generally when it feels the heat of the fire. Sometimes it diſcharges, at the ſame time, the meconium, or excrement which was collected in the inteſtines during its reſidence in the matrix. This evacuation is not always performed ſo ſoon; but if it does not happen in the courſe of the firſt day, the child is apt to be afflicted with a pain in the bowels; in which caſe methods are taken to facilitate

litate the diſcharge. The meconium is of a black colour; and it is a certain proof that the infant is effectually eaſed of it, when the ſubſequent ſtools are of a whitiſh caſt. This change generally happens on the ſecond or third day; and then the excrement becomes more fetid than the meconium: a proof, that the bile and other bitter juices of the body begin to inter-mix with it.

Inſtead of being made to ſuck ſo ſoon as born, the infant is allowed time to throw off the liquid and ſlime, which are in its ſtomach, and the meconium, which is in its bowels. As theſe ſubſtances might ſour the milk, and produce bad effects, it is firſt made to ſwallow a little wine and ſugar, in order to fortify the ſtomach, and to procure ſuch evacuations as may diſpoſe it to receive nouriſhment, and digeſt it; nor ought it to receive the breaſt till ten or twelve hours after the birth.

Hardly has the infant left the womb of its mother, hardly does it enjoy the liberty of moving and extending its limbs, when it is again put into confinement: it is ſo ſwaddled, that it is not even allowed to move itſelf; and well is it that the compreſſion is not ſo great as to obſtruct the reſpiration, if, at the ſametime, the precaution has not been taken to lay it upon its ſide, in order that the moiſture, which it it ought to diſcharge from the mouth, may emit of itſelf; ſince, in order to facilitate this emiſſion, it is denied the power of turning its head. Do not thoſe nations act more wiſely than we who cover or clothe their children, without ſhackling them in ſwathing-bands? The Siameſe, the Japaneſe, the Indians, the Negroes, the Savages of Canada, of Virginia, of Braſil, and almoſt all the inhabitants of South-America, lay the infant naked upon a ſuſpended bed of cotton, or put it into a kind of cradle of furr. This practice is certainly liable to fewer inconveniences than ours. In ſwaddling a child, it is impoſſible but the

the reſtraint muſt give it uneaſineſs; and the efforts it makes to diſentangle itſelf, are more apt to injure the form of the body, than the unſeemly poſitions into which they might put itſelf, were it at liberty. Swathing-bands may be compared to the bodice, or jumps, which girls are made to wear, in order to preſerve the ſhape, and hinder it from being diſfigured; but which, nevertheleſs, occaſion more inconveniences, and more deformities, than they prevent.

If the motion, which children ſtruggle for, in the ſwaddling-cloth, is hurtful, the inaction, in which they are held by it, is perhaps ſtill more ſo. Want of exerciſe naturally retards the growth of the limbs, and diminiſhes the ſtrength of the body; and, of conſequence, ſuch children as enjoy the liberty of moving at pleaſure, muſt be more vigorous than thoſe who are ſwathed. It was for this reaſon, that the ancient Peruvians gave infants the full freedom of their arms, in a ſwaddling-bag; and that afterwards they put them up to the middle of the body in a hole dug in the earth, and lined with linen. By this method, they had their arms free, and could move the head, and bend the body, without falling and hurting themſelves. So ſoon as they were able to ſtep, they were preſented with the breaſt, at a little diſtance, as an incentive for them to walk. The children of Negroes are often expoſed to much greater fatigues, in order to come at the nipple; which they ſeize, without the aſſiſtance of the mother, and to which they cling in ſafety, notwithſtanding ſhe is all the while in motion, or at work. They begin to walk, or rather to creep on the knees and hands, in the ſecond month; and this exerciſe qualifies them for running afterwards in this manner, almoſt as nimbly as if they were upon their feet.

Infants, when newly-born, ſleep much, though with frequent interruptions. As they are alſo in frequent

quent want of nouriſhment, they ought in the day, to receive the breaſt every two hours, and in the night, every time they awake. The greateſt part of both day and night they paſs in ſleep, during the firſt month; and as they do not even ſeem to awake, but from a ſenſe of pain, or of hunger, their reſt generally terminates with a fit of crying. In this ſituation they neceſſarily remain in the cradle; and as they are ſtill confined in the ſhackles of the ſwaddling-cloth, it becomes more and more irkſome and painful. Their excrements, whoſe acrimony is offenſive to their delicate, and very tender ſkin, render them wet, and often chilly; and in this diſtreſs, by their cries alone can they obtain relief. With the utmoſt attention ought this relief to be given them; rather indeed ought all ſuch inconveniences to be prevented by changing part of their clothing at leaſt twice or thrice every day, and even in the night. The Savages themſelves deem it an object ſo eſſential, that, though they are unprovided with linen, and though their changes of ſkins cannot poſſibly be ſo frequent as ours of cloth, they yet ſupply this deficiency by the uſe of other ſubſtances; which they poſſeſs in greater quantities, and of which, conſequently, there is no neceſſity to be ſparing. In North-America, a quantity of powder, obtained from wood that has been gnawed by worms, and therefore commonly called worm-eaten, is placed in the bottom of the cradle, and from time to time renewed. On this powder, the infant is laid, and with ſkins it is covered: and though a bed of feathers, it is pretended, cannot be more ſoft and eaſy, yet it is not to indulge the delicacy of the child, that this cuſtom was introduced, but to keep it neat and clean; which in effect it does, by drawing off the moiſture. In Virginia, they place the child naked upon a plank, covered with cotton, and provided with a hole, as a paſſage for the excrement. Here the cold is often unfa-

unfavourable to this cuſtom; but it is almoſt general in the Eaſt, and eſpecially in Turkey. It has this farther advantage, too, that it precludes all care, and is the moſt certain method of preventing the effects of the uſual negligence of nurſes: if maternal tenderneſs alone is capable of exerting that continual vigilance, that minute attention, which are ſo neceſſary for a new-born infant; can ſuch vigilance, ſuch attention, be expected from a mercenary, a groveling nurſe?

Some nurſes will deſert their children for ſeveral hours, without feeling the ſmalleſt anxiety as to their ſituation; and others are ſo cruel as to be unaffected with their very cries. Then do the hapleſs innocents ſeem to be in a kind of deſpair: then do they exert every effort, of which they are capable; and, till their little ſtrength actually forſakes them, implore aſſiſtance by their cries. If theſe violent agitations do not create ſome diſtemper, they diſcompoſe, however, the temperament of the child, and even influence, perhaps, its diſpoſition.

There is one cuſtom which careleſs and lazy nurſes frequently abuſe. Inſtead of employing effectual methods for relieving the infant, they content themſelves with rocking it furiouſly in the cradle; which procures a momentary ceſſation of its cries, and, if continued, ſtuns it, till at length it falls aſleep. But this ſort of ſleep is merely a palliative; and, ſo far is the agitation by which it was obtained from removing the cauſe of the preſent complaint, that it may diſorder the head and ſtomach, and occaſion future diſorders of very fatal conſequence.

Before children are put into the cradle, there ought to be ſome certainty that they want nothing; and, when they are rocked, it ſhould never be with ſuch violence as to confound, or ſtun them. If their ſleep is not ſound, a ſlow and equal motion of the cradle is ſufficient to render it ſo: nor ought they to be rocked often: for, if accuſtomed to it, they will

will not otherwiſe go to reſt. That they may enjoy good health, their repoſe ought to be ſpontaneous; and though it ought to be long, yet by too much ſleep the temperament of the body might be injured. In this caſe, they ſhould be removed from the cradle, and awaked by gentle motion; their ears ought to be amuſed with ſome ſoft and agreeable ſounds; and their eyes, with ſome brilliant and ſtriking objects. It is at this age, that the ſenſes make their firſt impreſſions; and theſe are of more future importance than many, perhaps, may imagine.

The eyes of children are always directed to the ſtrongeſt light; and if to this light only one eye can be directed, the other, from want of exerciſe, will remain more weak. In order to prevent this inconvenience, the cradle ought to be ſo placed, that the light, whether it comes from a window, or a candle, may front it. In this poſition, both eyes may receive it, and thus, by exerciſe, acquire equal ſtrength. If one eye, however, ſhould become ſtronger than the other, the child would ſquint; for of this defect, it is inconteſtably proved, the natural cauſe is, the inequality of ſtrength in that organ.

For the firſt and ſecond months, and even for the third and fourth, the infant, eſpecially when its conſtitution is weak and delicate, ought to receive no nouriſhment but ſuck. Whatever be its ſtrength, however, from the breaſt alone, ought its ſuſtenance to be derived during the firſt month. In Holland, in Italy, in Turkey, and in general over all the Levant, children have nothing but the breaſt for a whole year. The ſavages of Canada ſuckle them till they are four or five, and ſometimes ſix or ſeven years of age. With us, nurſes frequently have not enough of milk to ſatisfy the demands of their children; and, in order to be frugal of what they have, they feed them, even from the firſt, with a compoſition of boiled flour and milk. This nouriſh-

ment allays their hunger; but as their ſtomach and bowels are yet too weak to digeſt a groſs and viſcous ſubſtance, they ſuffer by it, and not unoften die by this kind of indigeſtion.

The milk of animals, ſucked from the teat, may ſupply the deficiency of that of the nurſe; and this ſuccedaneum may be uſed with advantage, where, from ſuch deficiency, there is any apprehenſion for the child. To receive the milk immediately from the teat is neceſſary, in order that it may be of an equal and a proper warmth, and eſpecially, that by the ſuction, it may mix with the ſaliva, which facilitates the digeſtion; for, as the muſcles are then in motion, the ſaliva flows, by preſſing the glands and the other veſſels. In the country, I have known ſeveral peaſants, who never had any nurſe but an ewe; and theſe peaſants were as vigorous as any others.

After two or three months, when the child has acquired ſtrength, they begin to give it food a little more ſolid: this conſiſts of a kind of bread, made of flour and milk, which, by degrees, diſpoſes the ſtomach to receive the common bread, and ſuch other nutriment as it will afterwards be accuſtomed to.

As an introduction to the uſe of ſolid food, the conſiſtency of liquid food is gradually increaſed; and, therefore, after having habituated the child to flour and milk boiled, they give it bread diluted in ſome convenient fluid. During the firſt year, infants are incapable of maſtication; as of the teeth they have yet only the primordial ſubſtance, enveloped in gums ſo ſoft, that their feeble reſiſtance can produce no effect on any ſolid matter. We ſee ſome nurſes, eſpecially among the common people, who chew the food firſt, and then make the child ſwallow it; a practice, from which, before we reflect upon it, we ought to baniſh every idea of diſguſt, and to remember, that it can make no impreſſion upon infants. Indeed,

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ſo far are they from being leſs eager to receive their nouriſhment from the mouth of the nurſe, than from her breaſt, that it is a cuſtom which Nature ſeems to have introduced in a number of countries, widely diſtant from each other. We find it in Italy, in Turkey, in the greateſt part of Aſia, in America, in Canada, &c. I conceive it to be highly uſeful, and excellently adapted to their conſideration; as it is the only method, by which their ſtomach can be furniſhed with the ſaliva, that is required for the digeſtion of ſolid food. If the nurſe chews a bit of bread, her ſaliva dilutes it, and renders it more nutritious than if it had been moiſtened in any other liquid; yet this precaution is only neceſſary till they can employ their teeth, chew their food, and dilute it with their own ſaliva.

The *inciſores*, or fore-teeth, are eight in number, four in the front of each jaw-bone. Theſe generally appear firſt, though ſeldom til ſeven, eight, or ten months have elapſed, and in ſome caſes, even twelve months. This appearance is often premature; many infants being born with teeth ſo ſharp as to cut their nurſe's nipple, and even the fœtus being ſometimes found to contain teeth, duly formed, long before the regular time of birth.

The original ſubſtance of the tooth is lodged in a ſocket, and covered by the gum, over which, as it grow it extends its roots. The body of the tooth preſſes forward by little and little upon this membrane, and diſtends it till it tears forth a paſſage. Though this operation is natural, it is not, however, conſonant to the general laws of Nature; which operate every minute upon the human body, without exciting in it the ſmalleſt pain, or even ſenſation. Here Nature makes a violent and an excruciating effort, which is accompanied with tears and cries, and ſometimes, with very diſagreeable conſequences. In breeding their teeth, children loſe their gaity and ſprightli-

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neſs, and become peeviſh and reſtleſs; the gum at firſt is red and ſwelled, and afterwards it whitens, when the preſſure is ready to intercept the courſe of the blood in the veins. They are conſtantly applying their finger to it, as if in order to aſſuage its irritation; and this relief they obtain in a yet ſtronger degree, by putting into their mouth a bit of ivory, coral, or any other hard and poliſhed ſubſtance, and by rubbing it upon that part of the gums which is moſt affected. This action, oppoſed to that of the tooth, relaxes the gum, and affords a momentary ceſſation of the pain; and though it alſo helps to attenuate the membrane of the gum, which from the double preſſure it thus ſuſtains, muſt break the more eaſily; yet this laceration, or rupture, is frequently attended with no ſmall degree of pain and danger. Even its own ſtrength does nature exert againſt itſelf. When the gums are more firm than uſual, by the ſolidity of the fibres of which they are compoſed, their reſiſtance to the action of the tooth is more obſtinate; in which caſe, an inflamation enſues, with all its deadly ſymptoms. In order to preclude this, recourſe muſt be had to art: an inciſion, therefore, is made on that part of the gum, which covers the tooth; by means of which minute operation, the tenſion and inflamation of the former ceaſe, and the latter obtains a free paſſage.

The teeth called *canini*, or dog-teeth, which are next to the inciſores, are in number four, and commonly appear in the ninth or tenth month. About the cloſe of the firſt, or in the courſe of the ſecond year, ſixteen other teeth appear; which are called *molares*, or grinders, and of which four are ſituated beſides each of the dog-teeth. The periods for the cutting of the teeth vary; and though it is pretended, that thoſe of the upper-jaw uſually appear ſooneſt, yet it often happens that they are preceded by thoſe of the under-jaw.

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The *inciſores*, the *canini*, and the firſt four of the *molares* naturally ſhed in the fifth, ſixth, or ſeventh year; but they are replaced by other teeth, which appear in the ſeventh year, though often more late, and ſometimes not till the age of puberty. The ſhedding of theſe ſixteen teeth is in order to make room for this new ſet; the other grinders, however, always remain, unleſs by accident; and when loſt, they are hardly ever recovered.

There are four other teeth ſtill, which are ſituated at the extremity of each jaw; but which fall not to the lot of every perſon. Theſe ſeldom appear till the age of puberty, or later; and they are called *dentes ſapientiæ*, or wiſdom-teeth. They appear in either jaw, one after another, or two at a time; and the only reaſon of there being a variety in the number of teeth in general, is, the variety in that of the wiſdom-teeth. Women, it has been obſerved, have generally fewer teeth than men.

Some authors have pretended, that the teeth continue to grow through life. They maintain, that were it not for their continual attrition, occaſioned by the food on which man ſubſiſts, his teeth would increaſe in ſize, (as is the caſe in ſeveral animals) in proportion as he increaſes in age. But this opinion is contradicted by experience. Perſons who live wholly on liquid food, have not teeth larger than thoſe who live on ſolid food; and if any thing is capable of wearing the teeth, it is rather their mutual friction one againſt another, than maſtication. Beſides, by confounding teeth with tuſks, they poſſibly deceived themſelves as to the growth of the former, in certain animals. The tuſks of the wild-boar, for example, continue to grow, during the life of the animal. The ſame obſervation holds with regard to the elephant; but it is highly improbable that the teeth of either, when once arrived at their natural ſize, ſhould ever exceed it. Tuſks

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have a greater affinity by far with horns, than with teeth. But here it is improper to enter into their ſpecific differences; nor ſhall any thing farther be added on the ſubject immediately before us, than that the firſt ſet of teeth in children is of a ſubſtance leſs ſolid than the ſubſequent one; and that the former, imperfectly faſtened in the jaws, is liable, on the ſmalleſt exertion, to be looſened.

It is often aſſerted, that the hair which the child brings with it into the world, is always brown, but that it preſently falls off, and is ſucceeded by hair of a different colour. Whether the remark is juſt, or not, I ſhall not determine: the hair of moſt children is fair, and, in many inſtances, almoſt white; and though in ſome it is red, and in others black, yet in thoſe who are likely to have afterwards a fair or brown complexion, the hair, in the earlieſt ſtage of infancy, is alſo fair, in a greater or a leſs degree. Thoſe who give a promiſe of future fairneſs, have generally blue eyes; but as indeed the colours are very imperfectly diſplayed in the eyes of infants, they have almoſt all the ſemblance of blue.

When a child is ſuffered to cry too violently, and too long, it may in conſequence be afflicted with a *hernia*, or rupture; in which caſe, an early application of bandages is neceſſary: with this aſſiſtance, the complaint is removed with eaſe, without it, it might laſt for life.

But the limits of our plan admit not a detail of every diſeaſe incidental to children. On this head let it only be remarked, that worms, and all the verminous diſeaſes, to which they are peculiarly ſubject, owe, very evidently, their origin to the quality of their food. Milk is a kind of chyle, an unadulterated nutriment: it is a kind of organical and generative ſubſtance; and therefore, if not digeſted by the ſtomach, it aſſumes, by its eſſential activity, other forms, and produces animated beings, par-

ticularly worms, in ſuch quantities, that the infant is often in danger of falling a victim to them. A part of the bad effects that accrue from worms, might probably be prevented, by allowing children to drink a little wine. This, as well as every other fermented liquor, contains few organical and nutritive particles: it is chiefly by its action upon the ſolids, that wine gives ſtrength; and it may be rather ſaid to fortify the body, than to ſtrengthen it. Beſides, the generality of children are fond of this liquor, or at leaſt eaſily accuſtomed to drink it.

However delicate the frame may be in infancy, it is yet leſs ſenſible of cold, than during any other ſeaſon of life. As the pulſe of infants is a great deal more quick than that of adults, ſo from this circumſtance alone it may be concluded, that the internal heat is proportionally more ſtrong. On the ſame principle, it is hardly to be doubted, that of this heat the ſmaller animals poſſeſs a greater quantity than the larger; invariably as it has ever been found, that, in the ſame degree the animal is ſmall, the motion of the heart and arteries is vigorous and quick; and this, not in one ſpecies only, but in different ſpecies. The pulſe of an infant, or of a man of ſmall ſtature, is more frequent than that of a grown perſon, or a man of large ſize: as the pulſe of an ox is ſlower, ſo is that of a dog quicker than that of a man; and ſo precipitate are the motions in the heart of an animal ſtill ſmaller, as a ſparrow, for inſtance, that they can hardly be counted.

Till the age of three years, the life of an infant is highly precarious. In the courſe of the enſuing ſecond and third years, however, it becomes more certain; and at the age of ſix or ſeven, a child has a greater probability of living than at any other age. By conſulting Simpſon's tables of the degrees of mortality, at different ages, as applicable to London, it appears, that, of a certain number of children, born

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at one time, above a fourth part die in the firſt year, above a third in two years, and at leaſt the half in the firſt three years. Were this calculation juſt, a wager might be propoſed, that, on being brought into the world, an infant would not live three years. The common opinion is, that a man who dies at the age of twenty-five years, is to be lamented for the ſhort duration of his life; and yet, according to theſe tables, one half of mankind die before the age of three years, conſequently every individual who has paſſed his third year, far from repining at his fate, ought to conſider himſelf as treated with ſuperior favour by the Creator. But this mortality in children is by no means ſo great in other places as in London. M. Dupre of St. Maur has made it appear, by a number of obſervations made in France, that one half of the children born at the ſame time are not extinct in leſs than ſeven or eight years. By theſe obſervations it is alſo ſhewn, that at the age of five, ſix, or ſeven years, the life of a child is more certain than at any other age, and that an equal bet or wager may be laid for forty-two years longer; whereas, in proportion as a child lives beyond five, ſix, or ſeven years, the probable number of its years ſtill decreaſes. At twelve years, for inſtance, the equal chance is only for thirty-nine years; at twenty years, for thirty-three and a half; at thirty years, for twenty-eight; and thus forward, till the age of eighty-five, when there is an equal chance of living three years longer.*

There is ſomething very remarkable in the growth of the human body. The fœtus in the womb continues to increaſe more more, till the birth: The infant, on the contrary, increaſes leſs

* In the courſe of the preſent volume, we ſhall have occaſion to preſent our readers with a table, at large, of the different probabilities of human life.

and

and leſs, till the age of puberty, to which it ſeems to ſtir up, as it were, at once. The fœtus, for example, which is an inch long in the firſt month, is two inches and a quarter in the ſecond; three inches and a half in the third; five inches and upwards in the fourth; ſix inches and a half, or even ſeven inches, in the fifth; eight inches and a half, or nine inches, in the ſixth; eleven inches and upwards, in the ſeventh; fourteen inches, in the eighth; and eighteen inches, in the ninth.

If ſuch is the length of the child, at its birth, this length will increaſe in the ſubſequent twelve months, to ſix, or perhaps to ſeven inches: that is, at the end of the firſt year, it will be twenty-four or twenty-five inches; of the ſecond, twenty-eight or twenty-nine inches; of the third, only thirty, or, perhaps, thirty-two inches; and from this age till the age of puberty, it will hardly advance more than one inch and a half, or two inches, in the courſe of each year. From theſe obſervations it is evident, that the fœtus increaſes more in a month, towards the cloſe of its reſidence in the matrix, than the infant does in a year, till the time of puberty; when Nature ſeems to make one grand effort to unfold the animal machine, and to complete her work.

Of what importance it is, that the child ſhould have a proper nurſe, it is almoſt needleſs to add. So eſſential is it, that her conſtitution ſhould be ſound, her juices untainted, that we have almoſt daily inſtances of diſeaſes being imparted from the nurſe to the infant, and from the infant to the nurſe. Whole villages have even been known, whoſe inhabitants were infected with the venereal virus, which diſeaſed nurſes had communicated by ſuckling the children of other women.

Were mothers to ſuckle their own offſpring it is probable the latter would be more ſtrong and vigorous. The milk of a ſtranger muſt be leſs proper for

them than that of the mother; for, as the fœtus is nouriſhed in the matrix by a fluid, which bears a ſtrong reſemblance to the milk that is formed in the breaſt, the infant is already, as it were, habituated to that particular milk. The milk of any other woman, on the contrary, is a nouriſhment, new to the child, and ſometimes ſo different from the other, that, if confined to it, it is apt to ſicken and languiſh; a circumſtance, of which if the conſequences are not ſeaſonably prevented by the ſubſtitution of another nurſe, ſoon proves fatal.

Here I cannot help obſerving, that the cuſtom of crowding a multitude of children into one place, as in the hoſpitals of large cities, is highly repugnant to, what ought to be the grand object propoſed, their preſervation. The greateſt part of ſuch children fall victims to a kind of ſcurvy, or to other diſeaſes, from which they might have been exempted, had they been parcelled out in ſmaller numbers over the town, or rather in the country. The ſame revenue would doubtleſs be ſufficient for their ſupport in this form, as in the other; and an infinity of lives, in which, it is well known, conſiſt the real riches of a ſtate, would be ſaved.

At twelve or fifteen months, infants begin to liſp. *A* is the vowel which they articulate with moſt eaſe, as it requires nothing more than the opening of the lips, and the emiſſion of a ſound. *E* requires, that the tongue ſhould be raiſed, as the lips are opened; and is therefore pronounced with a degree of more trouble. *I* alſo is attended with greater difficulty; as in the articulation of this vowel, the tongue is elevated ſtill more, and made to approach the teeth of the upper jaw. In the pronounciation of *O*, the tongue muſt be lowered, and the lips contracted; and in that of *U*, the latter muſt be alſo contracted, and in ſome degree extended. The firſt conſonants which children pronounce, are thoſe which require the leaſt

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explained them by affinities ſo remote, hypotheſes ſo falſe, that they had better have never mentioned them. On no ſubject have ſo many arguments been adduced, ſo many facts and obſervations collected. But thoſe arguments, facts, and obſervations, have been generally digeſted ſo badly, and arranged ſo unſkilfully, that it is not ſurprizing they ſhould have been attended with as little information as utility.

CHAP. IV.

A Deſcription of Man

THE body attains its full heighth during the age of puberty; or, at leaſt, a ſhort time after. Some young people ceaſe growing at fourteen, or fifteen; while others continue their growth till two or three and twenty. During this period they are moſtly of ſlender make; their thighs and legs ſmall, and the muſcular parts as yet unfilled: But, by degrees, the fleſhy fibres augment; the muſcles ſwell, and aſſume their figure; the limbs become more proportioned, and more round; and, before the age of thirty, the body, in men, has acquired its moſt perfect ſymmetry.

In women, the body attains this ſymmetry more ſoon, as with them the age of maturity is more early: the muſcles, and all the other parts being leſs ſtrong, leſs compact, and leſs ſolid, than thoſe of men, they require leſs time in coming to perfection; and, as they are leſs in ſize, that ſize is ſooner completed. Hence it is, that the perſons of women are found to be as complete at twenty, as as thoſe of men are found to be at thirty.

The body of a well-ſhaped man ought to be ſquare, the muſcles expreſſed with boldneſs, and the lines

lines of the face distinctly marked. In woman superior elegance prevails; her form is more delicate, and more smooth. Strength and majesty belong to the former, grace and softness are the peculiar embellishments of the latter.

In both, does each part even of their form declare their sovereignty over every living creature. Man supports his body erect; his attitude is that of command; and his face, which is turned towards the heavens, displays the dignity of his station. The image of his soul is painted in his countenance; and the excellence of his nature penetrates through the material form in which it is enclosed. His majestic port, his sedate, and resolute step, announce the superiority of his rank. He touches the earth only with his extremity; and beholds it as if at a disdainful distance. His arms are not given to him for pillars of support; nor, by rendering his hands callous against the ground, does he lose the delicacy of which the hand is the principal organ. The arms and hands are formed for very different purposes; they are formed to second every intention of his will, and to perfect the gifts of Nature.

When the soul is at rest, all the features of the visage seem settled in a state of profound tranquility. Their proportion, their union, their harmony, seem to mark the sweet serenity of the mind, and to give a true information of what passes within. When the soul, however, is excited, the human visage becomes a living picture; where the passions are expressed with as much delicacy as energy, where every motion is designed by some correspondent feature, where every impression anticipates the will, and betrays those hidden agitations, that he would often wish to conceal.

It is particularly in the eyes that the passions are painted; and in which we may most readily discover their beginning. The eye seems to belong to the soul

ſoul more than any other organ; it ſeems to participate of all its emotions; as well the moſt ſoft and tender, as the moſt violent and tumultuous. Theſe it not only receives, but tranſmits by ſympathy; the obſerving the eye of one catches the ſecret fire from another; and thus the paſſion often becomes general.

Such perſons as are ſhort-ſighted labour under a particular diſadvantage, in this reſpect. They are, in a manner, entirely cut off from the language of the eyes; and this gives an air of ſtupidity to the face, which often produces very unfavourable prepoſſeſſions. However intelligent we may find ſuch perſons, it is with difficulty that we renounce our former prejudices againſt them. In this manner, we are too much induced to judge of men by their phyſiognomy; and having, perhaps, at firſt, caught up our judgments prematurely, they mechanically influence us all our lives after. This extends even to the very colour, or the cut of people's cloaths; and we ſhould for this reaſon be careful, even in ſuch trifling particulars, ſince an article ſo paltry as dreſs go to make up a part of the total judgment which thoſe we converſe with may form to our advantage.

The vivacity, or the languid motion of the eyes, gives the ſtrongeſt marks to phyſiognomy; and their colour contributes ſtill more to enforce the expreſſion. The different colours of the eye are the dark-hazle, the light-hazle, the green, the blue, the grey, the whitiſh-grey, and alſo the red. Theſe different colours ariſe from the different colours of the little muſcles that ſerve to contract the pupil, and they are very often found to change colour with diſorder, and with age.

Thoſe moſt frequent are, the hazle and the blue, and very often both theſe colours are found in the eyes of the ſame perſon. Thoſe eyes which are called black are only of the dark-hazle, which may be

eaſily ſeen upon cloſer inſpection; however, thoſe eyes are reckoned the moſt beautiful where the ſhade is the deepeſt; and either in theſe, or the blue eyes, the fire, which gives to the eye its fineſt expreſſion, is more diſtinguiſhable in proportion to the darkneſs of the tint. For this reaſon, the black eyes, as they are called, have the greateſt vivacity; but, probably, the blue have the moſt powerful effect in beauty, as they reflect a greater variety of lights, being compoſed of more various colours.

This variety, which is found in the colour of the eyes, is peculiar to man, and one or two of the brute-creation; but, in general, the colour in any one individual is the ſame in all the reſt. The eyes of oxen are brown; thoſe of ſheep of a water colour; thoſe of goats are grey, &c. and it may alſo be, in general, remarked, that the eyes of moſt white animals are red; thus the rabbit, the ferrit, and, even in the human race, the white Moor, all have their eyes of a red colour."

Though the eye, when put into motion, ſeems to be drawn on one ſide, yet it only moves round its centre; by which its coloured part moves nearer, or farther from the angle of the eye-lids, or is elevated or depreſſed. The diſtance between the eyes is leſs in man than in any other animal; and in ſome of theſe, it is ſo great, that it is impoſſible that they ſhould ever view the ſame object with both eyes at once, unleſs it be at a great diſtance.

Next to the eyes, the features, which moſt give a character to the face, are the eye-brows; which being, in ſome meaſure, more apparent than the other features, are moſt readily diſtinguiſhed at a diſtance.

The eye-laſhes have an effect, in giving expreſſion to the eye, particularly when long and cloſe; they ſoften its glances, and improve its ſweetneſs Man and apes are the only animals that have eye

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laſhes both upon the upper and lower lids; all other animals want them on the lid below.

The eye-lids ſerve to guard the ball of the eye, and to furniſh it with a proper moiſture. The upper lid riſes and falls; the lower has ſcarce any motion; and though their being moved depends on the will, yet it often happens that the will is unable to keep them open, when ſleep, or fatigue, oppreſſes the mind. In birds, and amphibious quadrupedes, the lower lid alone has motion; fiſhes and inſects have no eye-lids whatſoever.

The forehead makes a large part of the face, and a part which chiefly contributes to its beauty. It ought to be juſtly proportioned; neither too round nor too flat; neither too narrow nor too low; and the hair ſhould come thick upon its extremities. It is known to every body how much the hair tends to improve the face; and how much the being bald ſerves to take away from beauty. The higheſt part of the head is that which becomes bald the ſooneſt, as well as that part which lies immediately above the temples; and as for the hair under the temples, and at the back of the head, it is ſeldom known to fail.

Of all parts, or appendages of the body; the hair is that which is found moſt different, in different climates; and often, it not only contributes to mark the country, but alſo the diſpoſition of the man. It is in general, thickeſt where the conſtitution is ſtrongeſt; and more gloſſy and beautiful where the health is moſt permanent. The ancients held the hair to be a ſort of excrement, produced like the nails; the part next the root puſhing out that immediately contiguous. But the moderns have found that every hair may be truly ſaid to live, to receive nutriment, to fill and diſtend itſelf like the other parts of the body. The roots, they obſerve, do not turn grey ſooner than the extremities, but

the whole hair changes colour at once; and we have many inſtances of perſons who have grown grey in one night's time.

The noſe is the moſt prominent feature in the face; but, as it has ſcarce any motion, and that only in the ſtrongeſt paſſions, it rather adds to the beauty, than to the expreſſion of the countenance.

The form of this feature, and its advanced poſition, are peculiar to the human viſage alone. Other animals, for the moſt part, have noſtrils, with a partition between them; but none of them have an elevated noſe. Apes themſelves have ſcarce any thing elſe of this feature, but the noſtrils; the reſt of the feature lying flat upon the viſage, and ſcarce higher than the cheek-bones.

The mouth and lips, next to the eyes, are found to have the greateſt expreſſion. The paſſions have great power over this part of the face; and the mouth marks its different degrees, by its different forms. The organ of ſpeech ſtill more animates this part, and gives it more life than any other feature in the countenance. The ruby-colour of the lips, and the white enamel of the teeth, give it ſuch a ſuperiority over every other feature, that it ſeems to form the principal object of our regards. In fact, the whole attention is fixed upon the lips of the ſpeaker; however rapid his diſcourſe, and however various the ſubject, the mouth takes correſpondent ſituations; and deaf men, *by every word that was ſpoken*, have been often found to *ſee* the force of thoſe reaſonings which they could not *hear*.

In the human embrio, the under-jaw is very much advanced before the upper. In inſtances of the moſt violent paſſion, this jaw has often an involuntary quivering motion; and often alſo, a ſtate of languor in it produces another, which is that of yawning.

When the mind reflects with regret upon ſome good unattained or loſt, it feels an internal emotion, which

which acting upon the diaphragm, and that upon the lungs, produces a ſigh; this, when the mind is ſtrongly affected, is repeated; ſorrow ſucceeds the firſt emotions; and tears are often ſeen to follow: ſobbing is the ſigh ſtill more invigorated; and lamentation, or crying, proceeds from the continuance of the plaintive tone of the voice, which ſeems to implore pity.

Laughter is a ſound of the voice, interrupted and purſued for ſome continuance. The muſcles of the belly, and the diaphragm, are employed in its weaker exertions; but thoſe of the ribs are violently agitated in the ſtronger: and the head ſometimes is thrown backward, in order to raiſe them with the greater eaſe. The ſmile is often an indication of kindneſs and good-will: it is alſo often uſed as a mark of contempt and ridicule.

Bluſhing proceeds from different paſſions; being produced from ſhame, anger, pride, and joy. Paleneſs is often alſo the effect of anger; and almoſt ever an attendant on fright and fear. Theſe alterations in the colour of the countenance, are entirely involuntary; all the other expreſſions of the paſſions are, in ſome ſmall degree, under controul; but bluſhing and paleneſs, betray our ſecret purpoſes; and we might as well attempt to ſtop them, as the circulation of the blood, by which they are cauſed.

The whole head, as well as the features of the face, takes peculiar attitudes from the paſſions: it bends forward, to expreſs humility, ſhame, or ſorrow; it is turned to one ſide, in languor, or in pity; it is thrown with the chin forward, in arrogance and pride; erect, in ſelf-conceit, and obſtinacy; it is thrown backwards in aſtoniſhment; and combines its motions to the one ſide, and the other, to expreſs contempt, ridicule, anger, and reſentment.

The parts of the head which give the leaſt expreſſion to the face, are the ears; and they are generally

nerally found hidden under the hair. Theſe, which are immoveable, and make ſo ſmall an appearance in man, are very diſtinguiſhing features in quadrupedes. They ſerve in them as the principal marks of the paſſions; the ears diſcover their joys or their terrors, with tolerable preciſion; and denote all their internal agitations. The ſmalleſt ears, in men, are ſaid to be moſt beautiful; but the largeſt are found the beſt for hearing. There are ſome ſavage nations who bore their ears, and ſo draw that part down, that the tips of the ears are ſeen to reſt upon their ſhoulders.

The ſtrange variety in the different cuſtoms of men, appears ſtill more extravagant in their manner of wearing their beards. Some, and among others the Turks, cut the hair off their heads, and let their beards grow. The Europeans, on the contrary, ſhave their beards, and wear their hair. The Negroes ſhave their heads in figures at one time, in ſtars at another, in the manner of friars; and ſtill more commonly in alternate ſtripes; and their little boys are ſhaved in the ſame manner. The Talapoins, of Siam, ſhave the heads and the eye-brows of ſuch children as are committed to their care. Every nation ſeems to have entertained different prejudices, at different times, in favour of one part or another of the beard. Some have admired the hair upon the cheeks on each ſide, as we ſee with ſome low-bred men among ourſelves, who want to be fine. Some like the hair lower down; ſome chuſe it curled; and others like it ſtrait.

Though faſhions have ariſen in different countries from fancy and caprice, yet when they have become general, they deſerve examination. Mankind have always conſidered it as a matter of moment, and they will ever continue deſirous of drawing the attention of each other, by ſuch ornaments as mark the riches, the power, or the courage of the weather.

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The value of those shining stones which have at all times been considered as precious ornaments, is entirely founded upon their scarceness or their brilliancy. It is the same likewise, with respect to those shining metals, of which the weight is so little regarded, when spread over our clothes. These ornaments are rather designed to draw the attention of others, than to add to any enjoyments of our own; and few there are who undazzled by the glitter of an outside, can coolly distinguish between the metal and the man.

All things rare and brilliant, will, therefore, ever continue to be fashionable, while men derive greater advantages from opulence than from virtue, and while the means of appearing considerable, are more easily acquired, than the title to be considered. The first impression we generally make, arises from our dress; and this varies, in conformity to our inclinations, and to the character we are ambitious to obtain or preserve. The modest man, or he who would wish to be thought so, desires to shew the simplicity of his mind, by the plainness of his dress; the vain man, on the contrary, takes a pleasure in displaying his superiority.

Another view which men have in dressing, is to encrease the size of their figure; and to take up more room in the world than Nature seems to have allotted them. We desire to swell out our clothes by the stiffness of art, and to raise our heels, while we add to the largeness of our heads. How bulky soever our dress may be, our vanities are still more bulky. The largeness of the doctor's wig arises from the same pride as the smallness of the beau's queue. Both want to have the size of their understanding measured by the size of their heads.

There are some modes that seem to have a more reasonable origin, which is, to hide or to lessen the defects of Nature. To take men altogether, there

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are many more ordinary and deformed, than beautiful and ſhapely. The former, as being the moſt numerous, give law to faſhion; and their laws are generally ſuch as are made in their favour. The women begin to colour their cheeks with red, when the natural roſes are faded; and the younger are obliged to ſubmit, though not compelled to it by the ſame neceſſity. In all parts of the world, this cuſtom prevails more or leſs; and powdering and frizzing the hair, though not ſo general, ſeems to have ariſen from a ſimilar controul.

But, leaving the draperies of the human picture, let us return to the figure, unadorned by art.

Man's head, whether conſidered externally or internally, is differently formed from that of all other animals; the monkey-kind only excepted, in which there is a ſtriking ſimilitude. There are ſome differences, however, which we ſhall take notice of in another place. The bodies of almoſt all viviparous quadrupeds are covered with hair; but the head of man ſeems the part moſt adorned; and that more abundantly than in any other animal.

There is a very great variety in the teeth of all animals; ſome have them above and below, others have them in the under-jaw only: in ſome they ſtand ſeparate from each other; while in ſome they are continued and united. The palate of ſome fiſhes is nothing elſe but a bony ſubſtance ſtudded with points, which performs the offices of teeth. All theſe ſubſtances, in every animal, derive their origin from the nerves; the ſubſtance of the nerves hardens by being expoſed to the air; and the nerves that terminate in the mouth, being thus expoſed, acquire a ſolidity. In this manner, the teeth and nails are formed in man; and in this manner alſo, the beak, the hoofs, the horns, and the talons of other animals, are found to be produced.

The neck ſupports the head, and unites it to the body

This part is much more conſiderable in the generality of quadrupedes, than in man. But fiſhes, and other animals that have not lungs ſimilar to ours, have no neck whatſoever. Birds, in general, have the neck longer than any other kind of animal: thoſe of them, which have ſhort claws, have alſo ſhort necks; thoſe, on the contrary, that have them long, are found to have the neck in proportion.

The human breaſt is outwardly formed in a very different manner from that of other animals. It is larger in proportion to the ſize of the body; and none but man, and ſuch animals as make uſe of their fore feet as hands, ſuch as monkies, bats, and ſquirrels, are found to have thoſe bones called clavicles, or, as we uſually term them, collar-bones. The breaſts in women are larger than in men; however, they ſeem formed in the ſame manner; and, ſometimes, milk is found in the breaſts of men, as well as in thoſe of women. Among animals, there is a great variety in this part of the body. The teats of ſome, as in the ape and the elephant, are like thoſe of men, being but two, and placed on each ſide of the breaſt. The teats of the bear amount to four. The ſheep has but two, placed between the hinder legs. Other animals, ſuch as the bitch, and the ſow, have them all along the belly; and, as they produce many young, they have a great many teats for their ſupport. Birds, and all other oviparous animals, have no teats; but viviparous fiſhes, as the whale and the dolphin, have both teats and milk. The form alſo of the teats, varies in different animals; and, in the ſame animal, at different ages.

The arms of men but very little reſemble the fore legs of quadrupedes, and much leſs the wings of birds. The ape is the only animal that is poſſeſſed of hands and arms; but theſe are faſhioned more rudely, and with leſs exact proportion, than in men. The ſhoulders are alſo much more large in man than

in any other animal, and of a form widely diſtinct.

The form of the back is not much different from what it is in many quadrupede-animals, only that in the former the reins are more muſcular, and more ſtrong. The buttock, however, in man, is different from that of all animals whatſoever. What goes by that name, in other creatures, is only the upper part of the thigh: man being the only animal that ſupports himſelf perfectly erect, the peculiar largeneſs of this part is owing to the peculiarity of his poſition.

The human feet are alſo different from thoſe of all animals, even apes not excepted. The foot of the ape is rather a kind of aukward hand; its toes, or rather fingers, are long, and that in the middle longeſt of all. This foot alſo wants the heel, as in man; and the ſole is narrower, and leſs adapted to maintain the equilibrium of the body in walking, dancing, or running.

The nails are ſmaller in man than in any one animal. If they were much longer than the extremities of the fingers, they would rather be prejudicial than ſerviceable, and obſtruct the management of the hand. Such ſavages as ſuffer them to grow long, make uſe of them in fleaing animals, in tearing their fleſh, and ſuch like purpoſes; however, though their nails are conſiderably larger than ours, they are yet by no means to be compared to the hoofs, or the claws of other animals.

There is little known exactly with regard to the proportion of the human figure; and the beauty of the beſt ſtatues is better conceived by obſervation than by meaſurement. Thoſe of antiquity, which were at firſt copied after the human form, are now become the models of it; nor is there one man found whoſe perſon any way approaches to thoſe inimitable per-

performances that have thus, in one figure, united the perfections of many.

Some who have ſtudied after the ancient maſters, divide the body into ten times the length of the face, and other into eight. They tell us, that there is a ſimilitude of proportion in different parts of the body: thus, that the hand is the length of the face; that the thumb is the length of the noſe; that the ſpace between the eyes, is the breadth of the eye; that the breadth of the thickeſt part of the thigh is double that of the thickeſt part of the leg, and treble the ſmalleſt; that the arms extended are as long as the figure is high; that the legs and thighs are the length of the figure.

Theſe correſpondences are, however, extremely arbitrary. In infants, the upper parts of the body are larger than the lower; the legs and thighs do not conſtitute any thing like half the heighth of the body; in proportion as the child increaſes in age, the inferior parts increaſe in length; ſo that the body is not equally divided, till it has acquired its full growth. In women, the anterior part of the breaſt is more prominent than in men; and as in thoſe, proportioned to the ſize of the body, it is more thick, ſo in theſe it is more large. In women, too, the hips are conſiderably more bulky; and ſo eaſily is the difference in the conformation of thoſe two parts diſcovered, that it is ſufficient to diſtinguiſh the ſkeleton of a woman from the ſkeleton of a man.

The total heigth of the human figure varies conſiderably. Men are ſaid to be tall, who are from five feet four or five inches, to five feet eight or nine. The middle ſtature is from five feet, or five and an inch, to five feet four inches; and ſuch as fall under theſe meaſures, are ſaid to be of ſmall ſtature. Women in general are two or three inches ſhorter than men. As for giants and dwarfs, of them we ſhall have occaſion to ſpeak in another place.

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Though the body of a man is more externally delicate than that of any of the animals, it is, however, exceedingly muſcular, and, for its ſize, perhaps more ſtrong. Were we to compare the ſtrength of a lion with the ſtrength of a man, we ought to conſider, that the claws of the former give a falſe idea of its power, and, that what we aſcribe to its force, is nothing more than the effect of its arms. Thoſe which Man has received from Nature are not offenſive; and happy were it if Art had never furniſhed him with weapons more terrible than thoſe which arm the paws of the lion.

But there is another, and perhaps, a better manner of comparing the ſtrength of man with that of animals; namely, by the weights which either can carry. We are aſſured, that the porters of Conſtantinople carry burthens of not leſs weight than nine hundred pounds; and M. Deſaguliers tells us, of a man in an upright poſture, who, by diſtributing a certain number of weighs, in ſuch a manner that every part of his body bore its ſhare, was able to ſupport a weight of two thouſand pounds. By the ſame expedient a horſe, which is at leaſt ſix or ſeven times our bulk, might, if its ſtrength were in the ſame proportion, be enabled to carry a load of twelve or fourteen thouſand pounds; an enormous weight in compariſon of what that animal uſually ſupports, even when the weight is diſtributed with every poſſible advantage.

The ſtrength of a man may be ſtill farther eſtimated by the continuance of his labour, and by the agility of his motions. Men, who are exerciſed in running, outſtrip horſes, or at leaſt continue their ſpeed for a greater length of time. In a journey alſo, a man will walk down a horſe; and after they have proceeded together for ſeveral days, the horſe will be quite tired, and the man will be as freſh as at the beginning. The royal meſſengers of Iſpahan,

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who are runners by profeſſion, go thirty-ſix leagues in fourteen or fifteen hours. Travellers aſſure us, that the Hottentots out-run lions in the chace; and that the Savages who hunt the elt, purſue with ſuch ſpeed this animal, which is as fleet as a ſtag, that they at laſt tire down, and take it. A thouſand other ſurpriſing things are told of the nimbleneſs of ſavages, and of the long journeys they accompliſh, on foot, over the moſt craggy mountains, and the moſt unfavourable roads, where there is no path to direct, and every obſtacle to oppoſe. A thouſand and twelve hundred leagues are theſe people ſaid to travel in leſs than ſix weeks, or two months, Birds excepted, whoſe muſcles are indeed ſtronger in proportion than thoſe of any other creature, what animal could ſupport ſuch a continuance of fatigue? The civilized man is ignorant of his own ſtrength; nor is he ſenſible how much he loſes of it by effeminacy, and how he might add to it by the habit of vigorous exerciſe.

Here and there, indeed, men are found among us of extraordinary ſtrength; but this gift of Nature, which would be valuable to them, were they obliged to uſe it in their defence, or in uſeful labour, is of very trifling ſervice with the poliſhed part of mankind, among whom mental perfections are held in higher eſtimation than bodily, and manual exertions are confined to perſons of the loweſt claſſes.

Woman wants much of the ſtrength of man; and of this ſuperiority the latter has too often availed himſelf, by tyrannically enſlaving a ſex, which was formed to partake with him of the pleaſures, as well as of the pains of life. Savage nations ſubject their women to a continued ſeries of labour. On them is impoſed every office of drudgery, while the huſband indolently reclines in his hammock. From this inactive ſituation he is ſeldom rouſed but by the calls of hunger, when he is obliged, either by fiſhing or hunting,

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to make ſome variety in his entertainments. A ſavage has no idea of taking pleaſure in exerciſe; and nothing ſurpriſes him more than to ſee an European walk repeatedly forward, and then back again, merely for his amuſement, or recreation. All men have a tendency to lazineſs; but the ſavages of hot countries are not only lazy to an extreme, but tyrannical to their women, beyond any other claſſes of men. It is only among nations highly civilized and poliſhed, that women are raiſed to that equality of condition, which is nevertheleſs ſo natural, and ſo neceſſary to the true enjoyment of ſociety; of which all the refinements flow from themſelves. To ſtrength they oppoſe arms that are ſure to conquer, when, by modeſty, they teach us to pay homage to beauty; a natural advantage, which, with the ſkill to manage and improve its influence, is ſuperior to ſtrength. This is evident from the different ideas which different nations entertain of beauty. Theſe indeed are ſo widely oppoſite, ſo palpably contradictory, that there is every reaſon to ſuppoſe the ſex have gained more by the art of rendering themſelves objects of deſire, than even by this gift of Nature, about which mankind are ſo much divided. As, from the difficulty of obtaining it, the value of a thing ſtill increaſes, ſo beauty has always had its admirers, and its votaries, while the poſſeſſors of it have maintained a becoming dignity, and turned a deaf ear to every addreſs, of which virtue was not the poſitive baſis.

So widely did the ancients diſagree with us, in reſpect of beauty, that, with them, a ſmall fore-head, and eye-brows joined, or almoſt imperceptibly ſeparated, were accounted ornaments in the female countenance; and even to this day, in Perſia, the union of the eye-brows is held in no ſmall eſtimation. In ſeveral parts of the Indies, if to be handſome is the object, it is neceſſary that the teeth ſhould be black,

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the hair white; and, in the Mariana-Iſlands, one of the principal occupations of the women is, to blacken the teeth with certain herbs, and to whiten the hair by certain lotions, prepared on purpoſe. In China and Japan, among the eſſential ingredients of beauty are, a viſage large, eyes ſmall and almoſt concealed, a noſe flat and bulky, feet diminutively little, and a belly enormouſly big. Among the Indians of America and Aſia, ſome tribes there are, who, in order to render the countenance more large than the natural ſize, flatten the heads of their children, by compreſſing the fore and hind parts between planks; others there are, who flatten and lengthen them by compreſſing the ſides; others ſtill, who flatten them from the crown; and others ſtill, who exert every effort to render them round. Each nation, and even each individual, has a peculiar prejudice, or taſte, with reſpect to beauty; of which the origin is undoubtedly ſome primary impreſſion received in infancy, and of which the continuance depends more, perhaps, on habit and chance, than on the diſpoſition of our organs.

When we come to treat of the different ſenſes, we ſhall be able to determine what ſtreſs is to be laid on the ideas of beauty in general, which we receive from the eyes. In the mean time, and that our deſcription of Man may not be found imperfect, let us examine the human countenance, as it appears among ourſelves, when agitated by the paſſions. In affliction, in joy, in love, in ſhame, in compaſſion, the eyes are apt to be ſwelled, and in a manner obſcured, by an over-flow of tears. The effuſion of theſe is always accompanied with a tenſion of the muſcles of the viſage, by which there is occaſioned an opening of the mouth. At the ſame time, the natural moiſture in the noſe becomes more copious, and, by internal paſſages, blends itſelf with the lachry-

chrymal moiſture; which does not, however, flow uniformly, but by intervals.

In ſorrow, the two corners of the mouth are lowered, the under lip is raiſed, the eye-lid is half-cloſed, the pupil of the eye is raiſed, and almoſt covered with the eye-lid, and the other muſcles of the face are ſo much relaxed, that the ſpace between the mouth and the eyes is larger than ordinary, and of conſequence the countenance appears lengthened. [*See the annexed plate, fig.* 1.]

In fear, terror, or horror, the forehead is wrinkled, the eye-brow is raiſed, the eye-lids are as much as poſſible extended, and diſcover a part of the white of the eye over the pupil, which is lowered, and ſomewhat concealed by the inferion eye-lid; the mouth, at the ſame time, is widely opened, and the lips being ſeparated, both the upper and under teeth are ſeen. [*See fig.* 2.]

In contempt and deriſion, the upper lip is raiſed on one ſide, and on the other, there is a little motion, as if in order to ſmile; the noſe is ſhrivelled on the ſame ſide that the lip is raiſed, and the corner of the mouth is extended; the eye on the ſame ſide is almoſt ſhut, while the other is open as uſual, but the pupil of each is lowered, as when one looks from high to low. [*See fig.* 3.]

In jealouſy, envy, and malice, the eye-brow falls down, and is knit, the eye-lid is raiſed, and the pupil lowered; the under lip is raiſed on each ſide, while the corners of the mouth are rather lowered, and the middle of the underlip is raiſed, in order to join the middle of the upper one. [*See fig.* 4.]

In laughter, the two corners of the mouth are extended, and ſomewhat raiſed; the upper part of the cheeks is raiſed, and the eyes are more or leſs cloſed; the upper lip is raiſed, while the under one is lowered; and, in immoderate laughter, the mouth is opened




Fig. 1.
Fig. 2.
Fig. 3.
Fig. 4.
Fig. 5.

opened, and the ſkin of the noſe is ſhrivelled. [*See fig.* 5.]

The arms, the hands, and the body in general, likewiſe aſſiſt the countenance by different geſtures, in the expreſſion of the emotions of the ſoul. In joy, for example, the eyes, the head, the arms, and the whole body, are agitated by quick and varied movements. In languor and melancholy, the eyes are lowered, the head is inclined to one ſide, and the whole body is motionleſs. In admiration, ſurprize, aſtoniſhment, all motion is ſuſpended, and we remain in one and the ſame attitude. This expreſſion of the paſſions is independent on the will; but there is another ſort of expreſſion, which ſeems to be produced by a reflection of the mind, by a command of the will, and by which the eyes, the head, the arms, and the whole body, are put in action. Theſe movements appear to be ſo many efforts which the ſoul makes, in order to defend the body, or at leaſt ſo many ſecondary ſigns, which repeat the paſſions, and which might of themſelves, be ſufficient to expreſs them. In love, for example, in deſire, in hope, we raiſe the head and the eyes towards the heavens, as if to implore the good we wiſh for; we carry the head and the body forward, as if to haſten, by this approach, the poſſeſſion of the deſired object; we extend the arms, we open the hands, in order to embrace, and to ſeize it. In fear, on the contrary, in hatred, or in horror, we advance the arms with precipitation, as if to repel the object of our averſion; and in order to ſhun it, we turn aſide the eyes and the head, and ſhrink back. Theſe movements are ſo quick, that they appear involuntary. But it is by habit we are deceived; for they are movements which depend on reflection, and which mark the perfection of the ſprings of the human body, by the readineſs with which each member obeys the dictates of the will.

As all the paſſions are movements of the ſoul, and as moſt of them have an affinity to the impreſſions of the ſenſes, they may, doubtleſs, be expreſſed by the movements of the body, and eſpecially by thoſe of the viſage. Of what paſſes in the internal part, we may form a judgment from the external action; and, in order to know the actual ſituation of the ſoul, we have only to inſpect the changes of the countenance. But as the ſoul has no form which can have any relation to a material form, we cannot judge of it by the figure of the body, or by the form of the viſage. An ill-formed body may contain an admirable ſoul, nor is the good or bad diſpoſition of a perſon to be determined by the features of his face; theſe features having no connection with the nature of the ſoul, no analogy, on which any reaſonable conjectures may be founded.

To this kind of prejudice, nevertheleſs, the ancients were ſtrongly attached; and in all ages there have been men, who have attempted to form into a ſcience of divination, their pretended ſkill in phyſiognomy. But it is evident, that this divination can only extend to the movements of the ſoul by thoſe of the eyes, the viſage, and the body; and that the form of the noſe, the mouth, and other features, contributes no more to the form of the ſoul, to the diſpoſition of the perſon, than does the largeneſs, or the thickneſs of the members, to thought. Shall a man have more wit, becauſe he has a noſe better-ſhaped than another? Shall he have leſs wiſdom, becauſe his eyes are little, and his mouth is large? It muſt be acknowledged, therefore, that every thing the phyſiognomiſts have told us, is without foundation, and that nothing can be more chimerical, than the inferences they have choſen to draw from their pretended metopoſcopical obſervations.

CHAP.

CHAP V.

Of Old Age and Death.

EVERY thing in Nature has its improvement and its decay. No ſooner does the human form arrive at its limited perfection, than it begins to decline. The alteration is at firſt inſenſible; and even ſeveral years elapſe before we take any great notice of it. Yet we ought to feel the weight of our years better than other people can count the number of them; and as they are not deceived as to our age, by judging of it from external changes, ſo we would be ſtill leſs deceived as to the internal effect by which ſuch changes are produced, if we did but obſerve ourſelves more, and flatter ourſelves leſs, and if, on all occaſions, any other perſon was not a better judge of us than we are of ourſelves.

When the body has attained its full heighth, and is extended into its juſt dimenſions, by the final expanſion of all its parts, it begins to receive an additional bulk, which rather incommodes than aſſiſts it. This is formed from fat; a ſuperfluous ſubſtance, which, at the age of thirty-five, or forty, generally begins to clog the muſcles, and by which, in proportion to its increaſe, the body becomes leſs nimble, active, and unconſtrained in its motions, and the generative and other faculties decay.

The bones alſo, and the other ſolid parts of the body, having received their full length and breadth, continue to grow ſtill more ſolid. The membranes become cartilaginous, or griſtly, the cartilages become bony, the fibres become more hard, the ſkin dries up, wrinkles are gradually formed, the hair grows grey, the teeth fall, the viſage is deformed, and the body ſtoops. The firſt approach of theſe alterations is perceived before the age of forty; by

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ſlow degrees they advance till that of ſixty, and by rapid ones till that of ſeventy: after which period, decrepitude ſoon follows; and by the age of ninety, or a hundred, the life of man is generally terminated.

In the fœtus, the bones are of a ſubſtance little more ſolid than the muſcles and the fleſh; and however hard they afterwards become, the blood ſtill circulates through them, as through all the other parts of the body, by the means of certain canals. But theſe canals vary greatly during the different ſtages of life. In infancy, they are capacious; and the blood flows in ſome meaſure through the bones as through any other part of the body. In manhood, their ſize is greatly diminiſhed, and the circulation through them is proportionally ſlow. But, in the decline of life, as the blood which flows through the bones, no longer contributes to their growth, ſo thoſe props of the human frame neceſſarily become not only more ſolid, but more brittle.

The cartilages, which may be conſidered as ſoft and imperfect bones, grow alſo more rigid; and as they are generally placed near the joints, the motion of theſe muſt, of conſequence, become more difficult. Thus, in old age, every action of the body is performed with labour; and the cartilages, which in youth were elaſtic, and in manhood pliant, will now ſooner break than bend.

The membranes, whoſe ſubſtance is in many reſpects the ſame with that of the cartilages, become, likewiſe, as we grow old, more denſe and more dry. Thoſe, for example, which ſurround the bones, ceaſe to be ductile ſo early as the age of eighteen or twenty. Thus it alſo is with the fibres, of which the muſcles and the fleſh are compoſed; and though to judge from the external touch, the body ſeems, as we advance in years, to grow more ſoft, it is yet, in reality, in-

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creaſing in hardneſs. On ſuch occaſions, it is the ſkin, and not the fleſh, that communicates this perception. The fat, with which that is ſurrounded, gives an appearance of ſoftneſs, which the fleſh itſelf is far from poſſeſſing in reality; a circumſtance, of which, an undeniable proof is to be found in a compariſon of the fleſh of young and old animals: of theſe, the former is tender and delicate; the latter, hard, dry, and unfit for eating.

While the body increaſes in bulk, the ſkin will ſtretch to any degree of tenſion: but as the former diminiſhes, the latter never contracts, and hence the ſource of the wrinkles of the body in general. Thoſe of the face, however, depend in a greater meaſure on its form, its features, and its habitual movements. By attentively examining the countenance of a man at the age of twenty-five or thirty, we ſhall be able already to diſcover in it the origin of the different wrinkles it will have in old age. For this purpoſe, it is only neceſſary that the features be in a ſtate of violent agitation, as that of laughter, of weeping, or of ſome ſtrong grimace. All the little furrows that may be formed by theſe agitations, will, one day, become wrinkles, which no art ſhall be able to remove.

In proportion, then, as we advance in years, the bones, the cartilages, the membranes, the fleſh, the ſkin, and all the fibres of the body, grow more ſolid, more hard, and more dry. Every part ſhrinks, every motion becomes more ſlow: the circulation of the fluids is performed with leſs freedom; the perſpiration diminiſhes; the ſecretions alter; the digeſtion becomes ſlow and laborious; and the juices, no longer ſerving to convey their accuſtomed nouriſhment, are wholly uſeleſs, and as if they did not exiſt. Thus the body dies by little and little; all its functions are diminiſhed by degrees; univerſal rigidity prevails; life is driven, as it were,

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from one part of the frame to the other; and death at laſt ſeizes upon the little that is left.

As the bones, the cartilages, the muſcles, and all the other parts of the body, are naturally ſofter in women than in men, ſo they do not acquire ſo ſoon that hardneſs which haſtens death. Women, therefore, ought to be a longer time in feeling the effects of old age, than men. This is actually the caſe; and by conſulting the tables which have been formed reſpecting the duration of human life, we ſhall find, that, after a certain age, women have a greater chance for long life, than men of the ſame number of years. From this it may in like manner be inferred, that ſuch men as are in appearance more weak than others, and whoſe conſtitution rather reſembles that of women, have a probability of living longer than thoſe who ſeem to be more ſtrong, and more robuſt; as alſo, that in either ſex, ſuch perſons as have been ſlow in their advances to maturity, will be ſlow in their advances to the infirmities of old age.

In both theſe caſes, the bones, the cartilages, and all the fibres, require a longer time to arrive at that degree of ſolidity, which muſt be the foundation of their deſtruction; and this natural cauſe of death, far from being peculiar to man, is common alſo to animals, and even to vegetables. An oak does not periſh but becauſe its more ancient parts, which are in the centre, become ſo hard, and ſo compact, that they can no longer receive any nouriſhment; and the moiſture they contain, being deprived of circulation, becomes corrupted, and gradually alters the fibres of the wood, which become red, loſe their organiſation, and at length crumble into duſt.

The total duration of life may be determined, in ſome meaſure, by the time that has been employed in the attainment of maturity. A tree, or an animal, which takes but a ſhort time to finiſh its growth, periſhes much ſooner than a tree, or an animal, which

which is leſs premature. In both is the increaſe upward ſooneſt accompliſhed; nor does either begin to ſpread in bulk till it has acquired its ſummit of heigth. Man grows in ſtature, till the age of ſeventeen, or eighteen; but his body is not completely unfolded, in all its parts, till that of thirty. A dog, on the other hand, is at its full length in one year, and at its full thickneſs in another. But man, of whoſe growth the completion is ſo tedious, continues to live for ninety, or an hundred years; while the dog ſeldom ſurvives its tenth or twelfth year. To the generality of other animals this obſervation is equally applicable. Certain fiſhes, whoſe growth continues for a great number years, live for centuries; and of this lengthened duration of life no certain cauſe can be aſſigned but the particular conſtitution of their, which do not admit of the ſame ſolidity as the bones of terreſtrial animals.

Whether there are any exceptions to this kind of rule, which Nature has adopted in proportioning the duration of life to that of the bodily growth, we ſhall inquire when we come to the particular hiſtory of animals; as alſo, whether it is in reality true, that crows and ſtags live for ſuch a number of years, as is commonly pretended. In the mean while, as a general truth let it be remarked, that great animals live longer than ſmall ones, and this, becauſe the growth of the former is perfected leſs early than that of the latter.

The cauſes of our decay, then, we carry about with us; nor can we avoid the fatal arrow of death, or even avert it, without changing the laws of Nature. The ideas which a few viſionaries have formed of perpetuating life by ſome particular panacea, as that of the transfuſion of the blood of one living creature into the body of another, muſt have died with themſelves, did not ſelf-love conſtantly cheriſh our credulity, even to the perſuaſion of ſome things, which

which are in themſelves impoſſible, and to the doubt of others, of which every day there are demonſtrative proofs.

When the conſtitution of the body is ſound, it is poſſible perhaps, by moderation in the paſſions, temperance and ſobriety, to lengthen out the period of life for a few years. But even of this there ſeems to be an uncertainty; for, if it is neceſſary, that the body ſhould employ its whole ſtrength, that it ſhould conſume whatever it is capable of conſuming, that it ſhould undergo every poſſible exerciſe, whence could any benefit accrue from regimen, and from abſtinence! Men no doubt there are who have ſurpaſſed the uſual period of human exiſtence; and, not to mention Par, who lived to the age of one hundred and forty-four, and Jenkins, to that of one hundred and ſixty-five, as recorded in the Philoſophical Tranſactions, we have many inſtances of the prolongation of life to one hundred and ten, and even to one hundred and twenty years. Yet this longevity was occaſioned by no peculiar art or management. On the contrary it appears, that the generality of ſuch long-livers were peaſants accuſtomed to the greateſt fatigues, huntſmen, or labourers; men, in fact, who had employed their whole bodily ſtrength, and even abuſed it, if to abuſe it is poſſible, otherwiſe than by continual idleneſs and debauchery.

Beſides, if we reflect that the European and the Negro, the Chineſe and the American, the civilized man and the ſavage, the rich man and the poor, the inhabitant of the city, and the inhabitant of the country, however different in other reſpects, are yet entirely ſimilar as to the period allotted for their exiſtence; if we reflect, that the difference of race, of climate, of nouriſhment, of accommodation, makes no difference in the term of life; that men who feed on raw fleſh or on dried fiſh, on ſeago or on rice, on caſſava

ſava or on roots, live as long as thoſe who feed on bread and prepared meats; we muſt be ſtill more ſtrongly convinced, that the duration of life depends not either on habit, on cuſtom, or on the quality of food; that nothing can change the laws of that mechaniſm, by which the number of our years is regulated; and, that nothing can even affect them, but exceſſes of abſtinence, or of repletion.

If in the duration of life there is any difference to be found, it ought ſeemingly to be aſcribed to the quality of the air. In elevated ſituations, it has been obſerved, there are commonly found more old people, than in ſuch as are low. The mountains of Scotland and Wales, of Auvergne and Switzerland, have furniſhed more inſtances of extreme longevity than the plains of Holland or Flanders, of Germany or Poland. In general, however, the period of human exiſtence may be ſaid to be the ſame in every country. If not cut off by accidental diſeaſes, Man is found to live to the years of ninety or an hundred. Beyond that date our anceſtors did not live; nor has it in any degree varied ſince the time of David.

Should it be aſked, why, in the infancy of the world, men lived ſo much longer than at preſent, and by what means their exiſtence was lengthened to nine hundred, nine hundred and thirty, and even nine hundred and ſixty years, it may, with great probability of reaſon, be anſwered, that the productions of the earth might, at that time, be of a different nature from what they are at preſent. As, at the creation, the ſurface of the globe muſt have been far leſs ſolid, and leſs compact, than it afterwards became, ſo it is poſſible, that the productions of Nature, and even the human body itſelf, being more ductile, more ſupple, and more ſuſceptible of extenſion, their growth was not ſoon accompliſhed as at preſent. Every kind of nouriſhment being in itſelf more ſoft, and more ductile, the bones, the muſ-

cles, &c. neceſſarily retained their primitive ſoftneſs and ductility longer. As all the parts of the body, therefore, did not attain their complete expanſion till a great number of years had elapſed, ſo the generative faculties could not begin to operate till that expanſion was finiſhed; namely, at the age of one hundred and twenty, or one hundred and thirty; and the duration of life was proportioned to that required for the growth, as it is to this day. In the ſuppoſition, for example, that the age of puberty, when the generative faculties of man have received their due formation, was originally at the years of one hundred and thirty, as that age is now at thoſe of fourteen, it will appear, that the period of human exiſtence has always been proportionally the ſame as it is at preſent; ſince, by multiplying each of thoſe two numbers by the ſame number, as ſeven, for inſtance, we ſhall find that, as the life of man now is ninety-eight years, ſo it was formerly nine hundred and ten. It is probable, then, that the duration of human life decreaſed, in proportion as the ſolidity of the ſurface of the earth increaſed; and that the ages which elapſed from the creation to the time of David, having been ſufficient to communicate to terreſtrial ſubſtances all the conſiſtency which they are capable of acquiring, by the preſſion of gravity, the ſurface of the earth has ever ſince remained in the ſame condition, and the limits of the growth of its different productions have been fixed, as well as thoſe of the duration of life.

Independently of accidental maladies, which happen at every age, and which, at the latter period of life, become more dangerous, and more frequent, old men are ſubject to natural infirmities, that originate ſolely from a decay of the different parts of the body. The muſcular powers loſe their equilibrim, the head ſhakes, the hand trembles, the legs totter; and, the ſenſibility of the nerves decreaſing, the

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ſenſes, even the touch not excepted, become blunted. But, what ought to be conſidered as the greateſt infirmity of all, is, that men very aged are ſeldom equal to the office of generation. Of this inability two very ſufficient cauſes may be aſſigned; one, a defect of tenſion in the external organs, and the other, a decay of the ſeminal fluid. When old men do engender, they have little ſhare in their own production; and thence it happens, that young perſons, when married to men who are far advanced in years, decrepid, and deformed, often bring forth monſters, and children more defective ſtill than their father.

All the cauſes of decay act continually upon our material exiſtence, and contribute to its diſſolution. Nature, however, approaches to this much-dreaded period by ſlow and imperceptible degrees. Day after day is life conſuming; and every hour is ſome one or other of our faculties, or vital principles, periſhing before the reſt. Death, therefore, is only the laſt ſhade in the picture; and it is probable that man ſuffers a greater change in paſſing from youth to age, than from age into the grave. In the inſtant of the formation of the fœtus, life is as yet nothing, or next to nothing. Life increaſes with the body; and as ſoon as the latter begins to decreaſe, the former decreaſes alſo, till it is utterly deſtroyed. As our life begins by degrees, ſo by degrees it is terminated.

Why, then, be afraid of death, if our lives have been ſuch as not to make futurity dreadful? Why be afraid of that moment which is prepared by an infinity of other moments of the ſame kind? Death is as natural as life; and both happen to us in the ſame manner, without our having the ſmalleſt ſenſe or perception of them. If we enquire of thoſe whoſe office it is to attend the ſick and the dying, we ſhall find, that, except in a very few acute caſes, attended with

with convulſions, people expire quietly, and without the ſmalleſt indication of pain. Even with the dreadful agonies that accompany the former ſituation, the ſpectators are rather terrified, than the patient is tormented; for how many have we not ſeen, who, after having recovered from this laſt extremity, poſſeſſed not the ſmalleſt idea of what had paſſed, or even of what themſelves had ſuffered; and who, by thus ceaſing to have ſenſation, might, in fact, be ſaid to have ceaſed to live?

The greateſt number of mankind die, therefore, without knowing of it; and of the few who retain their ſenſes to the laſt, there is hardly one, perhaps, who does not alſo retain the hope of ſtill ſurviving his diſtemper. Nature, for the happineſs of man, has rendered this principle more powerful than reaſon. A perſon dying of an incurable diſorder; a diſorder which he already knew to be unavoidably fatal, by repeated inſtances in others, and is now aſſured that it is ſo by the inquietude of all around him, by the tears of his friends, and by the countenance, or the departure of the phyſician, is ſtill, nevertheleſs, buoyed up with the idea of getting over it. His intereſt is ſo nearly concerned, that he only attends to his own repreſentations: the opinion of others he conſiders as a groundleſs alarm; the hour of diſſolution comes; and, while every thing elſe is, as it were, dead, hope is ſtill alive and vigorous.

Direct your eyes to a ſick man, who ha told you an hundred times, that he feels himſelf dying; that he is convinced he cannot recover; that he is ready to expire: examine afterwards what paſſes on his countenance, when ſome perſon, from zeal, or from indiſcretion, ſhall tell him that his end is actually at hand; and you will ſee it change like that of a man, who hears an unexpected piece of news. He now ſeems not to believe himſelf, what he had been endeavouring to make you believe; he had only

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ſome doubt, ſome uneaſineſs, about his ſituation; his hopes, however, were far greater than his fears; and, but for the gloomy aſſiduity, the parade of woe, which generally ſurround a death-bed, he would be inſenſible of his approaching diſſolution.

By no means is death ſo dreadful, therefore, as we ſuppoſe it to be. It is a ſpectre, which terrifies us at a diſtance, but which diſappears, when we come to approach it more cloſely. Our conceptions of it are formed by prejudice, and dreſſed up by fancy. Not only do we conſider it as as a misfortune greater in itſelf than any other, but as a misfortune accompanied with the moſt excruciating anguiſh; and of this anguiſh we endeavour ſtill farther to extend our ideas, by reaſoning upon it, and by painting it in its moſt frightful colours. Death, many people ſay, muſt be terrible, ſince it is ſufficient to ſeparate the ſoul from the body; the pain of it muſt alſo be of conſiderable duration, ſince, the ſucceſſion of our ideas being the only meaſure of time, one minute of pain, in which theſe ideas ſucceed each other with a rapidity proportioned to the agony we ſuffer, muſt appear longer than a whole age, in which they flow gently, and in a manner correſpondent with the tranquil ſentiments that uſually affect us. In ſuch philoſophy, what an abuſe of reaſon! Bnt for the conſequences of it, hardly would it deſerve to have its futility expoſed. As by ſuch ſpecious arguments, however, a number of people are deceived, the happineſs of mankind in general is affected, and the aſpect of death is rendered a thouſand times more hideous than it poſſibly can be; to point out the erroneous principles on which they are grounded, muſt certainly be ſerviceable.

When the ſoul is originally united to our body, do we experience any extraordinary pleaſure, any briſk and ſudden joy, which delights and tranſports us? Moſt certainly not. What reaſon, then, can we have

to ſuppoſe that the ſeparation of the ſoul from that body may not be effected without pain? From what cauſe may ſuch pain ariſe? Shall we fix its reſidence in the mind, or in the body? The pain of the former can only be produced by thought, and that of the latter is proportioned to its ſtrength, or its weakneſs. In the inſtant of death, from a natural cauſe, this weakneſs is greater than ever; and therefore the body, if it does experience pain, experiences it, however, in a very trifling degree.

Let us now ſuppoſe a violent death; the death, for example, of a man, whoſe head is carried off by a cannon-ball. Does the pain which this man ſuffers laſt longer than a moment? Has he, in the interval of that moment, a ſucceſſion of ideas ſo rapid, that he may imagine the pangs he feels are to laſt an hour, a day, an age? Theſe points we ſhall endeavour to diſcuſs.

I own that the ſucceſſion of our ideas is in reality, as thoſe ideas relate to ourſelves, the only meaſure of time; and that, in proportion as the former flow with more or leſs uniformity, the latter appears to us of longer or ſhorter duration. But in this meaſure there is a unity, of which the proportion is neither arbitrary nor indefinite, but determined by Nature, and correſpondent to our organization. Between two ideas which ſucceed each other, or in which there is a ſimple difference, there is a certain interval that ſeparates them. However quick one thought may be, a little time is required before it can be followed by another thought; no ſuch ſucceſſion being poſſible in an indiviſible inſtant. The ſame obſervation holds with reſpect to the ſenſations of the body. A tranſition from pain to pleaſure, or even from one pain to another, requires a certain interval. This interval, by which our thoughts and ſenſations are neceſſarily ſeparated, is the unity I mention; and it can neither be extremely long, nor

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extremely ſhort: it muſt even be nearly upon an equality in its duration, as it depends upon the nature of the ſoul, and on the organization of the body, whoſe movements can have but one certain degree of determined quickneſs. In the ſame individual, therefore, there can be no ſucceſſion of ideas ſo rapid, or ſo ſlow, as to produce that enormous difference of duration, by which the pain of a minute is converted into that of an age, a day, an hour.

A very acute pain, of however ſhort continuance, tends to produce either a ſwoon, or death. As our organs have only a certain degree of ſtrength, ſo they cannot reſiſt above a certain degree of torture. If that becomes exceſſive, it ceaſes, becauſe it is ſtronger than the body; and this, being incapable to ſupport it, is ſtill leſs capable to tranſmit it to the ſoul, with which it can hold no correſpondence, but by the action of the organs. Here this action ceaſes, and therefore the internal ſenſation which the organs comunicate to the ſoul muſt neceſſarily ceaſe alſo.

What has already been advanced, is perhaps amply ſufficient to evince, that, at the inſtant of death, the pain is neither exceſſive nor of long duration; but in order to diſpel all fear from the boſom of timidity itſelf, we ſhall add a few words more upon the ſubject. Though exceſſive pains admits of no reflection, yet ſigns, at leaſt, of reflection have been often obſerved in the very moment of a violent death. When Charles XII. received, at Frederickſhall, the wound which at once terminated his exploits, and his exiſtence, he clapped his hand upon his ſword. Since it excluded not reflection, this mortal pang could not therefore be exceſſive. The brave warrior found himſelf attacked; he reflected that he ought to defend himſelf; and thence, it is evident, he ſuffered no more than what might have been ſuffered from an ordinary blow. That this action was nothing more than the reſult of a mechanical

cal motion, it would be abſurd to aſſert; evidently as it has been ſhewn, in our deſcription of man, that the movements of the paſſions, even thoſe which are moſt precipitate, depend always upon reflection, and are nothing more than effects of an habitual will of the ſoul.

If I have rather enlarged on this topic, it is only that I might deſtroy a prejudice ſo repugnant to the happineſs of man. To this prejudice many have fallen victims; and I have myſelf known ſeveral, of the female ſex in particular, who, from the very dread of death, have died in reality. Such terrible alarms ſeem, indeed, to be peculiar to thoſe whom Nature or education have endowed with ſuperior ſenſibility; as the groſs of mankind, and eſpecially ſuch as live in the country, are ſeen to look forward to death, if not with indifference, at leaſt without terror.

In viewing things as they are, conſiſts the ſpirit of true philoſophy. With this philoſophy our internal ſenſations would always correſpond, were they not perverted by the illuſions of imagination, and by the unfortunate habit we contract of fabricating to ourſelves phantoms of pain, and of pleaſure. Nothing do we conceive terrible, nothing charming, but what is at a diſtance; of either of which qualities to obtain a certain knowledge, however, we muſt have the reſolution, or the wiſdom, to take a cloſe and particular view of the ſources, from which they are ſuppoſed to ariſe.

If there be any thing neceſſary to confirm what has been ſaid, concerning the gradual ceſſation of life, or the generally-inſenſible approaches of our end, it is the uncertainty of the ſigns of death. By conſulting the different writers on this ſubject, and particularly Winſlow and Bruhier, we ſhall be convinced that between life and death, the ſhade is often ſo undiſtinguiſhable, that all the powers of art are inſufficient to determine where the one ends, and the other

ther begins. According to them, the colour of the viſage, the warmth of the body, the ſuppleneſs of the joints, are but equivocal ſigns of life ended; while, on the other hand, the paleneſs of the complexion, the coldneſs of the body, the ſtiffneſs of the extremities, the ceſſation of all motion, and the total inſenſibility of the parts, are ſigns to the full as equivocal of death begun. Thus it is alſo with regard to the pulſe, and the reſpiration, which are ſometimes ſo effectually kept under, that it is impoſſible to obtain the ſmalleſt perception of either. By carrying a mirror to the mouth of the perſon ſuppoſed to be dead, people often expect to find whether he breathes or not. But in this experiment there is little certainty: the mirror is often ſullied by the vapour of the dead body; and it as often remains unclouded when the perſon is ſtill alive. In the ſame manner, neither do burning nor ſcarifying, neither do noiſes in the ears nor pungent ſpirits applied to the noſtrils, give indubitable proofs of the diſcontinuance of life; and many are the inſtances of perſons who have undergone all ſuch trials, and yet, to the aſtoniſhment of the ſpectators, recovered afterwards, without the ſmalleſt aſſiſtance.

Nothing, therefore, can be more evident, than that we ought to be extremely cautious of renouncing, and committing to the grave, our fellow-creatures, till we have received an abſolute certainty of their departure. Neither ten, nor twenty, nor twenty-four hours are ſufficient for the diſtinction of a real from an apparent death; and there are inſtances of perſons who have been alive in the grave at the end of the ſecond, and even the third day. Why indifferently ſuffer to be interred with precipitation, thoſe very perſons whoſe lives we would moſt ardently have wiſhed to prolong? Why, though all men are equally intereſted in the abolition of it, does the practice ſtill ſubſiſt? On the authority of the moſt able

able phyſicians, it inconteſtably appears, that the body is ſometimes ſo far deprived of all vital function, as to have every external appearance of death; that, if in the ſpace of three days, or ſeventy-two hours, no ſign of life appears, and on the contrary the body exhales a cadaverous ſmell, there is an infallible proof of actual death; and that then, though on no account till then, the interment can with ſafety take place.

Hereafter we ſhall have occaſion to ſpeak of the uſages of different nations with reſpect to obſequies, interments, and embalments. The greateſt part even of thoſe who are the moſt ſavage, pay more attention than we to theſe laſt minutes. What with us is nothing more than a ceremony, they conſider as an eſſential duty. Far ſuperior is the reſpect which they pay to their dead. They clothe them, they ſpeak to them, they recite their exploits, they extol their virtues; while we, who pique ourſelves on our ſenſibility, with hardly an appearance of humanity, forſake and fly from them, and even avoid every place which may recall the idea of them. Than ſavages themſelves, then, do we in this reſpect diſcover, either more indifference or more weakneſs.

Having thus given a hiſtory of life, and of death, as they relate to the individual, let us now conſider them both, as they affect the whole ſpecies. Man, it is well known, dies at any age; and though in general it may be ſaid, that the duration of his life is longer than that of the life of almoſt any one animal, yet it cannot be denied that, at the ſame time, it is more uncertain and more variable.

Of late years, attempts have been made to aſcertain the degrees of ſuch variations, and to eſtabliſh, by different obſervations, ſome certainty as to the mortality of men at different ages. Were ſuch obſervations ſufficiently exact, and ſufficiently numerous, they would be admirably calculated to give a know-

knowledge of the quantity of people, of their increaſe, of the conſumption of proviſions, and of a number of other important objects. Many writers of diſtinguiſhed abilities, and among others, Halley and Simpſon, have given tables of the mortality of the human ſpecies; but as their labours have been confined to an examination of the bills of mortality of a few pariſhes in London, and other large cities, their reſearches, however accurate, ſeem, in my opinion, to give a very imperfect idea of the mortality of mankind in general.

In order to give a complete table of this nature, it is neceſſary to ſcrutinize not only the pariſh-regiſters of ſuch towns as London and Paris, where there is a perpetual ingreſs and egreſs of ſtrangers, but alſo thoſe of different country-places; that, by comparing the deaths which happen in the one, with the deaths which happen in the other, a general concluſion may be formed. M. Dupré, of St. Maur, a member of the French academy, whom we have already had occaſion to mention as an able calculator, has begun to execute this project upon twelve pariſhes in the country of France, and three in the capital. Having obtained his permiſſion to publiſh the tables he has drawn up on this occaſion, I do it with the greater pleaſure, as they are the only ones, from which the probabilities of human life in general can with any certainty be eſtabliſhed.

PARISHES

PARISHES IN THE COUNTRY.	Deaths	Years of Life. 1	2	3	4
Clemont	1391	578	73	36	29
Brinon	1141	441	75	31	27
Jouy	588	231	43	11	13
Lestiou	223	89	16	9	7
Vandeuvre	672	156	58	18	19
St. Agil	954	359	64	30	21
Thury	262	103	31	8	4
St. Amant	748	170	61	24	11
Montigny	833	346	57	19	25
Villeneuve	131	14	3	5	1
Goussainville	1615	565	184	63	38
Ivry	2247	686	298	96	61
Total of Deaths	10805				
Separation of the 10805 deaths into the years, in which they happened.		3738	963	350	256
Deaths before the end of the 1st and 2d years, &c. out of 10805 burials.		3738	4701	5051	5307
Number of persons entered into their 1st and 2d years, &c. out of 10805.	10805	7067	6014	5754	

PARISHES OF PARIS.	Deaths	Years of Life. 1	2	3	4
St. André	1728	201	122	94	82
St. Hippolytus . . .	2510	754	361	127	64
St. Nicolas	8945	1761	932	414	298
Total of Deaths	13189				
Separation of the 13189 deaths into the years, in which they happened		2716	1415	635	444
Deaths before the end of the 1st and 2d years, &c. out of 13189 burials.		2716	4131	4766	5210
Number of persons entered into their 1st and 2d years, &c. out of 13189.		13189	10473	9058	8423
Separation of the 23994 deaths in the three parishes of Paris, and in the 12 villages.		6454	2378	985	700
Deaths before the end of the 1st and 2d years, &c. out of 23994 burials.		6454	8832	9817	10517
Number of persons entered into their 1st and 2d years, &c. out of 23994.		23994	17540	15162	14177

Years of Life.

5	6	7	8	9	10
16	16	14	10	8	4
10	16	9	9	8	5
5	8	4	6	1	"
1	4	3	1	1	1
10	11	8	10	3	2
20	11	4	7	2	7
3	2	2	2	1	2
12	15	3	6	8	6
16	21	9	7	5	5
1	"	"	"	"	"
34	21	17	15	12	8
50	29	34	26	13	19
178	154	107	99	62	59
5485	5639	5746	5845	5907	5966
5498	5320	5166	5059	4960	4898

Years of Life.					
5	6	7	8	9	10
50	35	28	14	8	7
60	55	25	16	20	8
221	162	147	111	64	40
331	252	200	141	92	55
5541	5793	5993	6134	6226	6281
7979	7648	7396	7196	7055	6963
509	406	307	240	154	114
11026	11432	11739	11979	12133	12247
12477	12968	12562	12255	12015	11861

Years of Life.

11	12	13	14	15	16
6	5	6	5	5	6
2	12	2	6	4	5
3	//	3	3	1	6
//	1	//	1	1	1
1	3	3	4	5	6
3	3	3	3	5	2
//	//	//	//	1	//
4	4	2	5	1	5
2	4	4	2	4	2
//	1	//	//	1	//
5	5	9	5	5	2
9	6	4	4	8	7
35	44	36	38	41	42
6001	6045	6081	6119	6160	6202
4839	4804	4760	4724	4686	4645

Years of Life.

11	12	13	14	15	16
3	9	6	7	10	13
9	9	6	7	6	5
34	38	25	21	33	37
46	56	37	35	49	55
6327	6383	6420	6455	6504	6559
6908	6862	6806	6769	6734	6685
81	100	73	73	90	97
12328	12428	12501	12574	12664	12761
11747	11666	11566	11493	11420	11330

Years of Life.					
17	18	19	20	21	22
6	10	3	13	8	9
9	4	5	14	8	14
4	4	3	5	2	4
1	//	//	//	//	//
3	3	4	7	4	6
7	8	5	6	4	6
3	1	1	1	1	3
1	6	1	4	7	6
2	3	3	5	4	3
2	4	//	1	1	4
5	10	9	10	6	10
4	14	10	12	6	15
47	67	44	78	51	80
6249	6316	6360	6438	6480	6569
4603	4556	4489	4445	4367	4316

Years of Life.

17	18	19	20	21	22
13	11	10	7	9	17
7	9	7	3	2	8
37	28	44	53	31	56
57	48	61	63	42	81
6616	6664	6725	6788	6830	6911
6630	6573	6525	6464	6401	6539
104	115	105	141	93	161
12865	12980	13085	13226	13319	13480
11233	11129	11014	10909	10768	10675

Years of Life.

23	24	25	26	27	28
10	7	22	9	13	10
7	11	24	9	7	13
4	4	5	2	2	3
3	//	1	1	1	3
8	6	22	3	5	10
3	6	11	10	4	9
1	1	2	2	//	5
6	4	5	4	4	3
10	8	7	3	3	3
1	//	1	//	2	1
5	6	11	9	9	8
10	9	10	14	5	9
68	62	121	66	55	77
6637	6699	6820	6886	6941	7018
4236	4168	4106	3985	3919	3864

Years of Life.					
23	24	25	26	27	28
11	9	9	8	17	13
7	9	10	13	10	10
48	41	59	47	53	51
66	59	78	68	80	74
6977	7036	7114	7182	7262	7336
6278	6212	6153	6075	6007	5927
134	121	199	134	135	151
13614	13735	13934	14068	14203	14354
10514	10380	10259	10060	9926	9793

Years of Life.

29	30	31	32	33	34
7	24	4	13	14	8
6	28	6	15	3	4
4	8	2	5	4	3
1	1	4	4	3	1
1	28	2	9	1	3
2	16	8	7	2	5
2	2	//	3	1	//
3	8	2	8	6	5
//	6	1	10	3	4
1	2	1	2	1	//
10	10	4	14	6	7
5	13	8	11	18	10
42	146	42	101	62	50
7060	7206	7248	7349	7411	7461
3787	3745	3599	3557	3456	3394

Years of Life.

29	30	31	32	33	34
11	21	6	10	17	15
9	7	9	12	13	13
34	63	25	57	41	54
54	91	40	79	71	82
7390	7481	7521	7600	7671	7753
5853	5799	5708	5668	5589	5518
96	237	82	180	133	132
14450	14687	14769	14949	15082	15214
9640	9544	9307	9245	9045	8912

Years of Age.					
35	36	37	38	39	40
17	12	18	15	3	41
20	8	8	8	6	37
13	6	7	4	1	20
6	4	4	1	1	4
17	5	5	4	//	41
18	9	4	5	1	22
7	//	1	2	2	4
7	4	5	5	3	20
8	4	1	2	//	8
6	5	//	5	//	7
8	8	5	2	7	14
19	12	23	13	3	27
146	77	71	76	27	245
7607	7684	7755	7831	7858	8103
3344	3198	3121	3050	2974	2947

Years of Life.

35	36	37	38	39	40
21	14	8	12	4	26
16	21	15	13	10	24
82	75	58	59	46	109
119	110	81	84	60	159
7872	7982	8063	8147	8207	8366
5436	5317	5207	5126	5042	4982
265	187	158	160	87	404
15479	15666	15818	15978	16065	16469
8770	8515	8328	8176	8016	7929

Years of Life.

41	42	43	44	45	46
4	10	10	6	20	5
6	8	3	6	11	5
//	3	//	4	13	3
//	2	2	//	3	3
1	3	2	2	14	5
2	8	7	3	14	1
1	3	1	4	3	//
1	6	2	4	13	3
3	6	5	4	13	6
//	3	1	//	2	1
10	11	4	5	11	9
7	19	7	14	22	10
35	82	44	52	139	51
8138	8220	8264	8316	8455	8506
2702	2667	2585	2541	2489	2350

Years of Life.

41	42	43	44	45	46
5	19	12	10	24	21
4	18	14	9	33	14
37	73	58	45	111	54
46	110	84	64	168	89
8412	8522	8606	8670	8838	8927
4823	4777	4667	4583	4519	4351
81	192	128	116	307	140
16550	16742	16870	16986	17293	17433
7525	7444	7252	7124	7008	6701

Years of Life.					
47	48	49	50	51	52
8	5	6	31	//	5
6	9	//	23	1	3
4	2	//	20	2	3
//	3	3	5	1	1
3	1	//	31	//	2
3	3	//	24	3	9
//	//	//	3	//	//
4	6	//	23	1	4
1	6	1	10	2	5
2	3	//	7	2	1
5	12	6	15	4	9
7	12	6	24	6	14
43	62	22	216	22	56
8549	8611	8633	8849	8871	8927
2299	2256	2194	2172	1956	1934

Years of Life.					
47	48	49	50	51	52
9	13	10	24	7	18
13	15	12	20	10	19
47	68	50	120	40	59
69	96	72	164	57	96
8996	9092	9164	9328	9385	9481
4262	4193	4097	4025	3861	3804
112	158	94	380	79	152
17545	17703	17797	18177	18256	18408
6561	6449	6291	6197	5817	5738

Years of Life.					
53	54	55	56	57	58
5	5	14	5	5	4
3	2	10	6	2	3
2	5	7	4	5	2
//	//	2	2	//	3
1	1	13	1	1	2
2	2	10	3	5	3
1	1	4	//	1	3
4	4	6	5	4	7
2	5	10	3	4	9
//	1	//	3	1	2
5	9	6	10	10	10
12	9	29	12	13	13
38	44	111	54	51	61
8965	9009	9120	9174	9225	9286
1878	1840	1796	1685	1631	1580

Years of Life.					
53	54	55	56	57	58
8	10	19	11	15	17
6	10	25	9	15	18
49	46	125	56	48	86
63	66	169	76	78	121
9544	9610	9779	9855	9933	10054
3708	3645	3579	3410	3334	3256
101	110	280	130	129	182
18509	18619	18899	19029	19158	19340
5586	5485	5375	5095	4965	4836

Years of Age.

59	60	61	62	63	64
4	52	2	6	5	2
//	24	1	3	4	7
//	20	//	5	2	4
//	2	//	//	1	//
//	35	//	//	1	1
3	22	3	2	7	5
1	6	//	3	2	2
2	27	//	4	3	4
2	13	3	7	5	5
1	4	3	//	1	1
3	24	6	9	7	6
3	40	3	12	12	11
19	269	21	51	50	48
9305	9574	9595	9646	9696	9744
1519	1500	1231	1210	1159	1109

Years of Life.

59	60	61	62	63	64
11	46	11	21	19	17
12	35	7	28	21	23
48	184	42	77	71	73
71	265	60	126	111	113
10125	10390	10450	10576	10687	10800
3135	3064	2799	2739	2613	2502
90	534	81	177	161	161
19430	19964	20045	20222	20383	20544
4654	4564	4030	3949	3772	3611

Years of Life.					
65	66	67	68	69	70
5	5	3	4	1	11
7	6	3	6	//	6
5	2	1	1	1	3
3	1	1	//	1	//
5	3	//	2	1	9
7	3	6	5	2	19
2	1	3	1	//	7
12	7	5	6	6	18
7	6	2	5	1	9
2	3	//	1	//	4
13	17	13	15	5	16
14	21	5	23	7	31
82	75	42	69	25	133
9826	9901	9943	10012	11037	10170
1061	979	904	862	793	768

Years of Life.					
65	66	67	68	69	70
20	27	21	25	9	36
25	19	12	20	13	35
95	95	67	115	50	177
140	141	100	160	72	248
10940	11081	11181	11341	11413	11661
2389	2249	2108	2008	1848	1776
122	216	142	229	97	381
20766	20982	21124	21353	21450	21831
3450	3228	3012	2870	2641	2544

Years of Life.					
71	72	73	74	75	76
1	3	1	3	5	1
2	12	2	//	4	2
1	2	//	1	1	//
//	2	//	//	//	//
1	4	//	//	3	//
1	11	5	5	8	//
//	2	1	//	//	//
3	10	2	2	18	2
2	8	3	2	9	1
//	3	//	//	//	//
8	22	12	12	16	6
6	21	11	19	24	12
25	100	37	44	88	24
10195	10295	10332	10376	10464	10488
635	610	510	473	429	341

Years of Life.					
71	72	73	74	75	76
9	25	14	19	20	16
10	28	5	15	23	11
64	118	53	90	127	63
83	171	72	124	170	90
11744	11915	11987	12111	12281	12371
1528	1445	1274	1202	1078	908
108	271	109	168	258	114
21939	22210	22319	22487	22745	22859
2160	2155	1784	1675	1507	1249

Years of Life.

77	78	79	80	81	82
1	2	2	6	//	//
//	3	//	3	1	
//	//	//	2	//	//
//	//	//	1	//	//
1	//	//	7	//	//
3	4	//	6	//	//
1	//	//	3		
4	4	2	17	1	3.
4	2	//	5	1	4
2	1	1	1	//	//
6	8	1	17	6	9
11	14	9	19	7	14
33	38	15	89	16	30
10521	10559	15074	10663	10679	10709
317	284	246	231	142	126

Years of Life.					
77	78	79	80	81	82
10	25	8	17	4	10
18	15	8	18	4	5
59	69	30	121	32	41
87	109	46	156	40	56
12458	12567	12613	12769	12809	12865
818	731	622	576	420	380
120	147	61	245	56	86
22979	23126	23187	23432	23488	23574
1135	1015	868	807	562	506

Years of Life.					
83	84	85	86	87	88
//	3	//	1	//	//
//	//	//	//	//	1
//	//	1		//	
//	//	//	//	1	1
//	//	//	//	//	//
1	3	4	//	1	2
1	1	//	//	//	//
//	//	//	//	//	//
5	7	2	4	4	2
4	7	5	4	4	3
11	21	12	9	8	9
10720	10741	10753	10762	10770	10779
96	85	64	52	43	35

Years of Life.					
83	84	85	86	87	88
8	7	3	7	4	5
16	4	10	4	1	4
37	25	35	19	20	25
61	36	48	30	25	34
12926	12962	13010	13040	13065	13099
324	263	227	179	149	124
72	57	56	39	33	43
23646	23703	23763	23802	22835	23878
420	348	291	231	192	159

Years of Life.					
89	90	91	92	93	94
1					
//	2	//	//	//	//
//	4	1	1	//	//
//	1				
1					
2					
1	2	//	2	//	
5	9	1	3	//	//
10784	10793	10794	10797	10797	10797
26	21	12	11	8	8

Years of Life.

89	90	91	92	93	94
2	4	1	2	1	2
2	2	2	2	1	1
4	17	5	9	5	4
8	23	7	13	7	7
13107	13130	13137	13150	13157	13164
90	82	59	52	39	32
13	32	8	16	7	7
23891	23923	23931	23947	23954	23961
116	103	71	63	47	40

Years of Life.

95	96	97	98	99	100
//	//	//	//	//	1
2	1	//	3		
1					
3	1	//	3	//	1
10800	10801	10801	10804	10804	10805
8	5	4	4	1	1

Years of Life.

95	96	97	98	99	100
//	1	1			
2	1	//	1		
5	2	1	4	1	4
7	4	2	5	1	4
13171	13175	13177	13182	13183	13187
25	18	14	12	7	6
10	5	2	8	1	5
23971	23976	23978	23986	23987	23992
33	23	18	16	8	7
1					

From this Table, many uſeful hints may be drawn. At preſent, however, we ſhall only conſider it as it reſpects the probabilities of the duration of life. It is obſervable, that, in the columns which correſpond with the years 10, 20, 30, 40, 50, 60, 70, and other round numbers, as 25, 35, &c. the deaths, in the country-pariſhes, are much more numerous in the preceding, than in the ſubſequent columns. The cauſe of this ſeeming inconſiſtency is, that the age is often regiſtered rather from uncertain conjecture, than from poſitive aſſurance. The generality of the lower people in the country are ignorant of their real age. If they die at the years of 58 or 59, in the pariſh-regiſter it is entered 60; and the ſame obſervation holds with reſpect to all the other round numbers. From this irregularity, however, the inconvenience is not great; as it may with eaſe be corrected by the laws of numerical ſucceſſion, or, in other words, by the manner in which the numbers ſucceed each other in the Table.

By the Table of the pariſhes in the country it appears, that almoſt one half of the children born, die before the age of four years; by that of the pariſhes in Paris, on the contrary, it appears, that, in order to produce this effect, ſixteen years are required. This great difference is ſolely to be attributed to the cuſtom, which ſo generally prevails in Paris, of bringing up their children in the country; where, of conſequence, the deaths that happen in infancy muſt be conſiderably more numerous. * In eſtimating the degrees of mortality, however, from the two tables united, which to me ſeem nearly to approach the truth, I have calculated the probabilities of the duration of life as follows. TABLE

* As what our Author here obſerves of Paris, is no doubt alike applicable to London, and to every other city, in proportion to its extent, and the number of its inhabitants, ſo the inferences he draws, and the tables he gives, may be depended upon as generally as well as particularly juſt.—To the reader of penetration and intelligence, this remark is perhaps ſuperfluous.

TABLE of the PROBABILITIES of the Duration of Life.

Age.	Duration of Life.		Age.	Duration of Life.	
Years.	Years.	Months.	Years.	Years.	Months.
//	8	//	23	31	10
1	33	//	24	31	3
2	38	//	25	30	9
3	40	//	26	30	2
4	41	//	27	29	7
5	41	6	28	29	//
6	42	//	29	28	6
7	42	3	30	28	//
8	41	6	31	27	6
9	40	10	32	26	11
10	40	2	33	26	3
11	39	6	34	25	7
12	38	9	35	25	//
13	38	1	36	24	5
14	37	5	37	23	10
15	36	9	38	23	3
16	36	//	39	22	8
17	35	4	40	22	1
18	34	8	41	21	6
19	34	//	42	20	11
20	33	5	43	20	4
21	32	11	44	19	9
22	32	4	45	19	3

Age.	Duration of Life.		Age.	Duration of Life.	
Years.	Years.	Mon	Years.	Years.	Months.
46	18	9	66	8	//
47	18	2	67	7	6
48	17	8	68	7	//
49	17	2	69	6	7
50	16	7	70	6	2
51	16	//	71	5	8
52	15	6	72	5	4
53	15	//	73	5	//
54	14	6	74	4	9
55	14	//	75	4	6
56	13	5	76	4	3
57	12	10	77	4	1
58	12	3	78	3	11
59	11	8	79	3	9
60	11	1	80	3	7
61	10	6	81	3	5
62	10	//	82	3	3
63	9	6	83	3	2
64	9	//	84	3	1
65	8	6	85	3	//

By this Table it appears, that it is reasonably to be expected, or, in other words, that we may lay or bet one to one, that an infant newly-born will live eight years; that an infant of one year will live thirty-three years longer; that an infant of two years will live thirty-eight years longer; that a man of twenty

twenty will live thirty-three years and five months longer; that a man of thirty will live twenty-eight years longer; and ſo proportionally of every other age.

It is to be obſerved, firſt, that the age at which the longeſt duration of life is to be expected, is that of ſeven; ſince an equal wager may be laid, that, at that age, a child will live forty-two years and three months longer; ſecondly, that at the age of twelve or thirteen, we have enjoyed one fourth of our exiſtence, as we cannot in reaſon expect to live above thirty-eight or thirty-nine years longer; that, in like manner, of that exiſtence we have enjoyed one half at the age of twenty-eight or twenty-nine, as we have only twenty-eight years longer to live; and, laſtly, that, before the age of fifty, three fourths of our life are paſſed, the remaining probability being only for ſixteen or ſeventeen years.

But theſe phyſical truths, however mortifying in themſelves, may be compenſated by moral conſiderations. A man ought to conſider as nothing the firſt fifteen years of his life. Every thing that happened to himſelf, or that happened in general, in this long interval of time, is effaced from his memory, or has at leaſt ſo little connection with the views, and the affairs, which afterwards occupy his thoughts, that it gives him no concern. Neither, indeed, has he the ſame ſucceſſion of ideas, nor, it may be ſaid, the ſame exiſtence. In a moral ſenſe, we do not begin to live, till we have begun to regulate our thoughts, to direct them towards a certain future object, and to aſſume to ourſelves a kind of conſiſtency, a ſtate which has ſome relation to what we ſhall afterwards become. By conſidering the duration of life in this, the only real point of view, we ſhall find, from the Table, that at the age of twenty-five, we have paſſed but one fourth part of our life; that at the age of thirty-eight, we have paſſed another fourth of it;

and, that at the age of fifty-ſix, there is one fourth of life ſtill remains.

CHAP. VI.

Of the Senſe of Seeing.

HAving deſcribed the different parts of which the human body is compoſed, let us now proceed to examine its principal organs; let us behold the expanſion of the ſenſes, and their ſeveral functions; and let us, at the ſame time, point out the errors to which, through them, we are in ſome meaſure ſubjected by Nature.

The eyes ſeem to be formed very early in the human embryo. In the chicken alſo, of all the parts that are double, theſe are the ſooneſt produced; and I have obſerved upon the eggs of ſeveral ſorts of birds, as well as upon thoſe of lizards, that the eyes were much more large, and early in their expanſion, than any other parts of two-fold growth. Though in viviparous animals, and particularly in man, they are, at firſt, by no means ſo large in proportion as in the oviparous claſſes, yet they obtain their due formation ſooner than any other parts of the body. Thus it is alſo with the organ of hearing. The little bones, that help to compoſe the internal parts of the ear, are entirely formed before any of the other bones, however large they may afterwards become, have acquired any part of their growth or ſolidity. Hence it is evident, that the parts of the body, which are furniſhed with the greateſt quantity of nerves are thoſe which appear the ſooneſt, and which are the ſooneſt brought to perfection.

If we examine the eyes of a child a few hours, or even a few days, after its birth, we ſhall eaſily diſcern

cern that, as yet, it makes not the ſmalleſt uſe of them. The organ not having acquired a ſufficient conſiſtency, the rays of light ſtrike but confuſedly upon the retina. Before the ſixth or ſeventh week, children turn their eyes indiſcriminately upon every object, without appearing to be affected with any. At this period, however, they plainly diſcover a choice in the objects of their attention. They fix their eyes upon the moſt brilliant colours, and ſeem peculiarly deſirous of turning them towards the light; and though this exerciſe does not give any exact notion of objects, it, however, ſtrengthens the eye, and qualifies it for future viſion.

Of the ſenſe of ſeeing, the firſt great error is, that every object appears inverted; and, till the touch has ſerved to undeceive it, the child actually beholds every thing upſide down. Another of its firſt deceptions is, that every object appears double. As the ſame object is formed diſtinctly upon each eye, ſo the ſame object is conſequently ſeen twice. This illuſion, like the other, can only be corrected by the touch; and therefore, were we denied the ſenſe of feeling, that of ſeeing would not only deceive us as to the ſituation, but as to the number, of every object around us.

In order to be convinced that we ſee objects inverted, we have only to obſerve the manner in which thoſe objects are repreſented, through a ſmall hole, in a darkened room. If no light can come in, but by means of this hole, all the objects without will be painted on the wall behind, in an inverted poſition: for, as all the rays which iſſue from the different points of the objects without, cannot enter the hole in the ſame extent and poſition which they had in leaving the object; ſince, if ſo, it would be neceſſary that the aperture were as large as the object; and, as each part, each point of the object ſends forth the image of itſelf on every ſide; as the

rays alſo, of which every image of this kind is formed, flow from all points of the object, as from ſo many centers, thoſe only can paſs through the ſmall aperture which come in oppoſite directions. Thus the hole becomes a center for the entire object, through which the rays from the upper, as well as from the lower parts of it, paſs in converging directions; and, of conſequence, they muſt croſs each other in the central point, and thus repreſent the objects behind, upon the wall, in an inverted poſition.

That we, in reality ſee all objects double, whatever our preſent ſenſations may tell us to the contrary, is alſo evident. As a proof of it, let us only compare the ſituation of any one object, after ſhutting the right eye, and then compare the ſame ſituation of the ſame object, by ſhutting the left eye, and leaving the other open. If, for example, we hold up a finger, and ſhut the right eye, we ſhall find it hide a certain part of the room; and if again, we ſhut the other eye, that part will become viſible, and the finger will ſeem to cover what had been viſible before. If we open both eyes, however, the part covered will appear to lie between the two extremes. But the truth is, of the object which our finger had covered we ſee one image to the right, and the other to the left. It is from habit that we ſuppoſe we ſee but one image placed between both; and thus, till the ſenſe of feeling has corrected the errors of ſight, if inſtead of two eyes, we had an hundred, we ſhould ſtill fancy the objects increaſed in proportion.

In each eye, therefore, is formed a ſeparate image of objects; and when theſe two images ſtrike the correſpondent parts of the retina, that is, the parts which are always affected at the ſame time, objects appear to us ſingle: but, when the images ſtrike the parts of the retina, which are not uſually affected together, then objects appear to us double, and we

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are in the ſituation of an infant juſt beginning to exert the faculty of viſion.

Cheſelden relates the caſe of a man, who, in conſequence of a blow on the head, having become ſquint-eyed, ſaw objects double for a long time; but who, notwithſtanding the injury he had thus received, was at length enabled, by ſlow and gradual ſteps, to ſee them ſingly as he had formerly done. Is not this a proof, more evident ſtill, that in reality we ſee things double, and that it is by habit alone we conceive them to be ſingle? Should it be aſked why children require ſo little time, in order to ſee things ſingle, and why perſons more advanced in years require, for the ſame purpoſe, ſo much time, when thus by accident made to ſee double, as in the inſtance above; it might be anſwered, that the ſenſations of children, in proportion as they are unoppoſed by any contradictory habit, are rectified with eaſe; but, that perſons who have for the ſpace of twenty, thirty, or forty years ſeen objects ſingle, becauſe they affected the two correſpondent parts of the retina, and who now ſee them double, becauſe they no longer affect thoſe parts, labour under the diſadvantage of a habit repugnant to that which they are deſirous to acquire; a habit, which is not perhaps to be removed within twenty, thirty, or forty years longer. It is indeed probable, that when men in years, from a change in the direction of the optical axes, ſee objects double, the remainder of life is inſufficient to enable them, even by continual efforts, to ſee them otherwiſe.

By the ſenſe of ſeeing we can form no ideaof diſtances, unleſs it is aided by the touch. Without this, every object appears to be within our eyes; and an infant, that is as yet a ſtranger to the ſenſe of feeling, is naturally affected as if every thing it ſees formed a part of itſelf. Such objects it conceives to be more or leſs bulky as they approach to, or recede from its eyes; inſomuch, that a fly which is at hand, will

will appear more large than an ox which is at a diſtance. It is experience alone that can rectify this miſtake; and by a long acquaintance with the real ſize of different objects, we are quickly aſſured of the diſtance at which they are ſeen. The laſt man in a file of ſoldiers appears in reality much more diminutive than the man who is neareſt to us. We do not, however, perceive this difference, but continue to think him of equal ſtature; for the numbers we have ſeen thus leſſened by diſtance, and have found by repeated experience to be of the natural ſize, when we come cloſer, inſtantly correct the ſenſe, and every object is perceived nearly in its natural proportion. But it is otherwiſe, when we obſerve objects in ſuch ſituations as have not allowed us ſufficient experience to correct the illuſions of the eye. If, for example, we view objects upon the ground, from a lofty tower, or *vice verſa*, as we have not had a habit of correcting the ſenſe in that poſition, they appear to us exceedingly diminiſhed.

Though a ſmall degree of reflection may ſerve to convince us of the truth of theſe poſitions, yet it may not be amiſs to corroborate them by an authority which cannot be diſputed. Mr. Cheſelden, having couched for a cataract, a lad of thirteen years of age, who had from his birth been blind, and thus communicated to him the ſenſe of ſeeing, was at great pains to mark the progreſs of his viſual powers; on which he afterwards publiſhed his obſervations in the Philoſophical Tranſactions. This youth, though hitherto incapable of ſeeing, was not, however, abſolutely and entirely blind. Like every other perſon, whoſe viſion is obſtructed by a cataract, he could diſtinguiſh day from night, and even black from white, or either from the vivid colour of ſcarlet. Of the form of bodies, however, he ſaw nothing, nor of colours themſelves, unleſs the light was ſtrong. At firſt, the operation was performed only

only upon one of his eyes; and when he ſaw for the firſt time, ſo far was he from forming the ſmalleſt conception of diſtances, that he ſuppoſed (as he himſelf expreſſed it) every thing he ſaw touched his eyes, in the ſame manner as every thing he felt touched his ſkin. The objects that pleaſed him moſt were thoſe of which the ſurfaces were plain, and the figures regular; though as yet he could in no degree judge of their different forms, or aſſign why ſome were more agreeable to him than others. The ideas he had entertained of colours, during his former dark ſtate, were ſo imperfect that, when he ſaw them in reality, he could hardly be perſuaded they were the ſame. When ſuch objects were ſhown him as he had, been formerly familiar with, by the touch, he beheld them with earneſtneſs, in order to diſtinguiſh them a ſecond time. As of theſe, however, he had too many to retain at once, the greateſt number were forgotten; and for one thing which he knew, after ſeeing it, there were a thouſand things, according to his own declaration, of which he no longer poſſeſſed the ſmalleſt remembrance. He was very much ſurpriſed to find that thoſe perſons, and thoſe things, which he had loved beſt, were not the moſt pleaſing to the eye; nor could he help teſtifying his diſappointment in finding his parents leſs handſome than he had conceived them to be. Before he could diſtinguiſh that a picture reſembled a ſolid body, above two months elapſed. Till then, he only conſidered it as a ſurface diverſified by a variety of colours: but, when he began to perceive that theſe ſhadings actually repreſented human beings, he alſo began to examine, by the touch, whether they had not the uſual qualities of ſuch bodies; and great was his ſurpriſe to find ſmooth and even, what he had ſuppoſed a very unequal ſurface. He was then ſhown a miniature-portrait of his father, which was contained in his mother's watch-caſe; and though he

readily

readily perceived the reſemblance, yet he expreſſed his amazement, how ſo large a face could be compriſed in ſo ſmall a compaſs. To him it appeared as ſtrange as that a pint-veſſel ſhould contain a buſhel. At firſt, he could bear but a very ſmall quantity of light, and he ſaw every object much greater than the life; but in proportion as he obſerved objects that were in reality large, in proportion he conceived the others to be diminiſhed. Beyond the limits of what he ſaw, he had no conception of any thing. He knew that the apartment he occupied, was only a part of the houſe; and yet he could not imagine how the latter ſhould appear larger than the former. Before the operation, he formed no great expectations of the pleaſure he ſhould receive from the new ſenſe he was promiſed. That thereby he might be enabled to read and write, was his grand object. He ſaid, among other things, that he could enjoy no greater delight from walking in the garden, with this ſenſe, than without it; becauſe there he already walked at his eaſe, and was acquainted with all the walks. With great truth he alſo remarked, that his blindneſs gave him one advantage over the reſt of mankind; an advantage which indeed he preſerved for a long time after he had obtained the ſenſe of ſeeing; namely, that of being able to walk in the night with confidence and ſecurity. No ſooner, however, had he begun to enjoy this new ſenſe, than he was tranſported beyond meaſure; and he declared, that every new object was a new ſource of delight to him, that his pleaſure was ſo great he had not language to expreſs it. About a year after, he was carried to Epſom, where there is a very beautiful, and a very extenſive proſpect: with this he ſeemed greatly charmed; and the landſcape before him he called a new method of ſeeing. He was couched in the other eye, a year after the former, and of both operations the ſucceſs was equally great. When

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he ſaw with both eyes every object appeared to him twice as large as when he ſaw but with one eye, though he did not ſee double, or at leaſt he ſhowed no marks from which any ſuch concluſion might be drawn.

Mr. Cheſelden inſtances ſeveral other perſons, who were in the ſame ſituation with this lad, and on whom he performed the ſame operation. He aſſures us, that on firſt obtaining the uſe of their eyes, they expreſſed their perceptions in the ſame manner as he had done, though leſs minutely; and that he particularly obſerved of them all, that, as they had never had any occaſion to move their eyes while deprived of ſight, they were exceedingly embarraſſed in learning how to direct them to the objects they wiſhed to obſerve.

When, from particular circumſtances, we cannot form a juſt idea of diſtance, and when we cannot judge of objects but by the angle, or rather the image, which they form in our eyes, we are then neceſſarily deceived as to the ſize of ſuch objects. Every man has experienced how liable we are in travelling by night to miſtake a buſh which is at hand for a tree, which is at a diſtance, or indeed a tree which is at a diſtance for a buſh which is at hand. In like manner, if we do not diſtinguiſh objects by their form, and if thereby we cannot judge of diſtance, the ſame fallacy will ſtill remain: in this caſe, a fly, which may paſs us with rapidity immediately before our eyes, will appear to be a bird at a conſiderable diſtance; and a horſe which may be in the middle of a plain, without motion, and in an attitude ſimilar; for example, to that of a ſheep, will appear no bigger than a ſheep, till we have once diſcovered that it is a horſe.

Whenever, therefore, we find ourſelves be-nighted in an unknown place, where no judgment is to be formed of diſtance; and where, becauſe of the

darkneſs, we cannot recognize the forms of the different objects that may preſent themſelves, we are every moment in danger of being miſled with reſpect to our ideas of ſuch objects. Hence proceeds that internal fear and dread which moſt men experience from the obſcurity of night; and hence proceeds the appearance of ſpectres, and of thoſe ſtrange, hideous, and gigantic figures, which ſo many perſons tell us they have ſeen. Though ſuch figures it is commonly aſſerted, exiſt ſolely in the imagination; yet it is highly poſſible, that they might appear literally to the eye, and be in every different reſpect ſeen as deſcribed to us. That this remark is conſonant to truth, will be allowed to be the more probable, when we reflect, that whenever we cannot judge of an object but by the angle which it forms in the eye, this object is magnified in proportion to its propinquity; and that, if it appeared at firſt to the ſpectator who is alike incapable of diſtinguiſhing what he ſees, and of judging at what diſtance he ſees it, if it appeared to him; I ſay, when at the diſtance of twenty or thirty paces from it, a few feet high, it muſt appear to him, when advanced to within a few feet of it, of a ſize ſtupendouſly increaſed. At this he muſt naturally be aſtoniſhed and terrified, till he comes to touch the ſeemingly gigantic object, and to diſtinguiſh it; for in the very inſtant that he has an actual perception of what it is, the object will diminiſh, and appear to him as it in reality is. If, on the other hand, he is afraid to approach it, and he flies from the ſpot with precipitation, the only idea he will have of what had preſented itſelf to him, will be that of the image, which had been formed in his eye; the image of a figure he had ſeen, gigantic in its ſize, and horrible in its form. The prejudice with reſpect to ſpectres, therefore, originates from Nature; and ſuch appearances depend not, as philoſophers have ſuppoſed, ſolely upon the imagination.

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When we cannot form an idea of diſtance by a compariſon of the intermediate ſpace between us and any particular object, we endeavour to diſtinguiſh the form of that object, in order to judge of its ſize; but when once we are acquainted with this form, and we at the ſame time, behold a number of objects whoſe forms are correſpondent, we conceive, that thoſe which are moſt brilliant are moſt proximate, and that thoſe which are moſt obſcure are moſt remote; a notion, which is not unoften the ſource of very ſingular miſtakes.

In a multitude of objects diſpoſed in a right line; as for example, the lamps upon the road from Verſailles to Paris; of which, as we cannot judge of the proximity or remoteneſs, but by the quantity of light they tranſmit to our eye, it often happens that when examined at the diſtance of the eigthth part of a league, we ſee all the lamps ſituated on the right hand inſtead of the left, on which they are in reality ſituated. This fallacious appearance is produced from the above-mentioned cauſe; for as the ſpectator has no evidence of the diſtance he is from the lamps, but by the quantity of light they tranſmit to him, ſo he conceives that the moſt brilliant lamps are thoſe which are the firſt and the neareſt to him, and thus in proportion of all the reſt, as they happen to be bright or obſcure. Now this ſeeming tranſpoſion is ſolely owing to the ſuppoſed change of their ſituation from the left hand to the right; for, to conceive to be before, what is actually behind, in a long file, is to to ſee on the right what is ſituated on the left, or on the left what is ſituated on the right.

The power of ſeeing objects at a diſtance is very rarely equal in both eyes. When this inequality is is in any degree great, the perſon ſo circumſtanced makes uſe only of one eye; ſhutting that with which he ſees the leaſt, and employing the other with all

its power; and hence proceeds that aukward look, which is diſtinguiſhed by the name of ſtrabiſm.

There are many reaſons to induce us to ſuppoſe that ſuch perſons as are ſhort-ſighted ſee objects larger than others; and yet it is a certain truth that they ſee them leſs. I am myſelf ſhort-ſighted, and my left-eye is ſtronger than my right. A thouſand times have I experienced, upon looking at any object, as the letters of a book, that they appear leaſt to the weakeſt eye; and that, when I place the book ſo that the letters appear double, the images of the left-eye, which is the ſtrongeſt, are greater than thoſe of the right, which is the moſt feeble. Several others I have examined, who were in ſimilar circumſtances, and I have always found, that the eye which ſaw every object beſt, ſaw it alſo largeſt. This I aſcribe to a particular habit; for near-ſighted people being accuſtomed to approach cloſe to the object, and to view but a ſmall part of it at a time, when the whole of the object is ſeen, it neceſſarily appears ſmaller to them than to others, whoſe viſion is more enlarged.

Infants having their eyes ſmaller than thoſe of adults, muſt of conſequence ſee objects ſmaller alſo. For as the image formed on the back of the eye muſt be large, as the eye is capacious, ſo infants, having it not ſo great, cannot have ſo large a picture of the object. This may likewiſe be a reaſon, why they are unable to ſee ſo diſtinctly, or at ſuch diſtances, as perſons who have attained the years of maturity.

Old men, on the contrary, ſee bodies cloſe to them very indiſtinctly, but bodies at a great diſtance from them with more preciſion. This may happen from an alteration in the coats, or perhaps the humours, of the eye; and not, as is ſuppoſed, from their diminution. The cornea, for inſtance, may become too rigid to adapt itſelf, and take a proper con-

convexity for ſeeing minute objects; and its very flatneſs will be ſufficient to fit it for diſtant viſion.

When we caſt our eyes upon an object extremely brilliant, or when we fix and detain them too long upon the ſame object, the organ is hurt and fatigued, the viſion becomes indiſtinct, and the image of the object which has thus too violently, or too perſeveringly, employed us, is painted on every thing we look at, and mixes with every object that occurs. How dangerous the looking upon bright and luminous objects is to the ſight, is evident from the effect it has on the inhabitants of countries, which are covered for the greateſt part of the year with ſnow; and travellers themſelves, who croſs theſe countries, are obliged, in order to prevent their eyes from being rendered totally inſenſible, to cover them with crape. Thus it is alſo in the ſandy plains of Africa; the reflection of the light is there ſo ſtrong, that it is impoſſible to ſuſtain the effect of it, without running a riſque of loſing the ſight entirely. Such perſons, therefore, as write, or read for any continuance, ſhould chuſe a moderate light in order to ſave their eyes; and though it may ſeem inſufficient at firſt, yet the eye will gradually become accuſtomed to the ſhade; and, at any rate, it will be leſs injured by too little light than by too much.

CHAP. VII.

Of the Senſe of Hearing.

AS the ſenſe of hearing, as well as of ſeeing, gives us notice of remote objects, ſo it is ſubject to ſimilar errors, and may on all occaſions impoſe upon us, when we cannot rectify, by the touch, the ideas which it produces. It communicates no diſtinct

diſtinct intelligence of the diſtance from whence a ſounding body is heard: a great noiſe far off, and a ſmall one very near, produce the ſame ſenſation; and, unleſs we receive information from ſome other ſenſe, we can never diſtinctly tell whether the ſound be a great or a ſmall one. It is not till we have by experience, become acquainted with any particular ſound, that we can judge of the diſtance from whence we hear it. When, for example, we know the tone of a bell, we are then at no great loſs to determine how far it is from us.

Every body that ſtricks againſt another produces a ſound, which is ſimple in ſuch bodies as are not elaſtic, but which is often repeated in ſuch as are. If we ſtrike a bell, for inſtance, a ſingle blow produces a ſound, which is repeated by the undulations of the ſonorous body, and which is multiplied as often as it happens to undulate or vibrate. Theſe undulations ſucceed each other ſo faſt, that the ear ſuppoſes them one continued ſound; whereas, in reality, they form many ſounds. A perſon who ſhould for the firſt time, hear the toll of a bell, would very probably be able to diſtinguiſh theſe breaks of ſound; and in fact, we can readily ourſelves perceive an intention and remiſſion in the ſound.

In this manner, ſounding bodies are of two kinds; thoſe unelaſtic ones, which being ſtruck, return but a ſingle ſound; and thoſe more elaſtic returning a ſucceſſion of ſounds, which uniting together form a tone. This tone may be conſidered as a great number of ſounds, all produced one after the other, by the ſame body, as we find in a bell which continues to ſound for ſome time after it is ſtruck. A continuing tone may be alſo produced from a non-elaſtic body, by repeating the blow quick and often, as when we beat a drum, or when we draw a bow along the ſtring of a fiddle.

Conſidering the ſubject in this light, if we ſhould mul-

multiply, the number of blows, or repeat them at quicker intervals upon the ſounding body, as upon a drum, for inſtance, it is evident that this will have no effect in altering the tone; it will only make it either more even or more diſtinct. But it is otherwiſe, if we encreaſe the force of the blow; if we ſtrike the body with double weight, this will produce a tone twice as loud as the former. If, for inſtance, I ſtrike a table with a ſwitch, this will be very different from the ſound produced by ſtriking it with a cudgel. From hence, therefore, we may infer, that all bodies give a louder and graver tone, not in proportion to the number of times they are ſtruck, but in proportion to the force that ſtrikes them. And, if this be ſo, thoſe philoſophers who make the tone of a ſonorous body, a bell, or the ſtring of an harpſichord, for inſtance, to depend upon the number only of its vibrations, and not the force, have miſtaken what is only an effect for a cauſe. A bell, or an elaſtic ſtring, can only be conſidered as a drum beaten; and the frequency of the blows can make no alteration whatſoever in the tone. The largeſt bells, and the longeſt and thickeſt ſtrings, have the moſt forceful vibrations; and, therefore, their tones are the moſt loud and the moſt grave.

To know the manner in which ſounds thus produced become pleaſing, it muſt be obſerved, no one continuing tone, how loud or ſwelling ſoever, can give us ſatisfaction; we muſt have a ſucceſſion of them, and thoſe in the moſt pleaſing proportion. The nature of this proportion may be thus conceived. If we ſtrike a body incapable of vibration with a double force, or, what amounts to the ſame thing, with a double maſs of matter, it will produces a ſound that will be doubly grave. Muſic has been ſaid, by the ancients, to have been firſt invented from the blows of different hammers on an anvil. Suppoſe then we ſtrike an anvil with an hammer of one

pound

pound weight, and again with an hammer of two pounds, it is plain that the two pound hammer will produce a ſound twice as grave as the former. But if we ſtrike with a two pound hammer, and then with a three pound, it is evident that the latter will produce a ſound one third more grave than the former. If we ſtrike the anvil with a three pound hammer, and then with a four pound, it will likewiſe follow that the latter will be a quarter part more grave than the former. Now, in the comparing between all thoſe ſounds, it is obvious that the difference between one and two is more eaſily perceived than between two and three, three and four, or any numbers ſucceeding in the ſame proportion. The ſucceſſion of ſounds will be, therefore, pleaſing in proportion to the eaſe with which they may be diſtinguiſhed. That ſound which is double the former, or, in other words, the octave to the preceding tone, will of all others be the moſt pleaſing harmony. The next to that, which is as two to three, or, in other words, the third, will be moſt agreeable. And thus univerſally, thoſe ſounds whoſe differences may be moſt eaſily compared as the moſt agreeable.

Sound has in common with light, the property of being extenſively diffuſed. Like light, it alſo admits of reflection. The laws of this reflection, it is true, are leſs diſtinctly underſtood than thoſe of light: all we know is, that ſound is principally reflected by hard bodies, and that their being hollow alſo ſometimes increaſes the reverberation. The internal cavity of the ear, which is faſhioned out in the temporal bone, like a cavern cut into a rock, ſeems to be fitted up for the purpoſes of ecchoing ſound with the greateſt preciſion.

One of the moſt common complaints in old age is deafneſs; which probably proceeds from the rigidity of the nerves in the labyrinth of the ear. This diſorder alſo proceeds ſometimes from a ſtoppage of the

the wax, which art may eaſily remedy. In order to know whether the defect be an internal or an external one, let the deaf perſon put a repeating-watch into his mouth; and if he hears it ſtrike, he may be aſſured that his diſorder proceeds from an external cauſe, and may be in ſome meaſure cured.

It often happens, that people hear better with one ear than another; and theſe, it is obſerved, have, what muſicians call, a bad ear. I have made many trials on perſons thus circumſtanced; and I have always found, that their defect in judging properly of ſounds proceeds from the inequality of their ears, and their receiving by both at the ſame time, unequal ſenſations. In like manner, as ſuch perſons hear falſe, they alſo, without knowing it, ſing falſe. They alſo frequently deceive themſelves with regard to the ſide from whence the ſound comes, generally ſuppoſing the noiſe to come on the part of the beſt ear.

Such as are hard of hearing, reap the ſame advantage from the trumpet made for this purpoſe, that ſhort-ſighted perſons do from glaſſes. Theſe trumpets might be eaſily enlarged, ſo as to encreaſe ſounds, in the ſame manner that the teleſcope does bodies: however, they could be uſed to advantage only in a place of ſolitude and ſtillneſs, as the neighbouring ſounds would mix with the more diſtant, one, sand the whole would produce in the ear nothing but tumult and confuſion.

Hearing is a much more neceſſary ſenſe to man than to animals. In theſe it is only a warning againſt danger, or an encouragement to mutual aſſiſtance. In man, it is the ſource of moſt of his pleaſures; and without it the reſt of his ſenſes would be of little benefit. A man born deaf, muſt neceſſarily be dumb; and his whole ſphere of knowledge muſt be bounded by ſenſual objects. We have a ſingular, and perhaps an unexampled, inſtance of a young man who, being born deaf, was reſtored, at the age

of twenty-four, to perfect hearing. The account, which is given in the Memoirs of the Academy of Sciences, 1703, page 18, is in ſubſtance as follows.

"A young man, of the town of Chartres, between the age of twenty-three and twenty-four, the ſon of a tradeſman, and deaf and dumb from his birth, began to ſpeak all of a ſudden, to the utter aſtoniſhment of the whole town. He gave them to underſtand that, about three or four months before, he had heard the ſound of the bells, and was greatly ſurpriſed at this new and unknown ſenſation. After ſome time, a kind of water iſſued from his left ear, and he then heard perfectly well with both. During theſe three months, he was ſedulouſly employed in liſtening without ſaying a word, and accuſtoming himſelf to ſpeak ſoftly, ſo as not to be heard, the words pronounced by others. He laboured hard alſo in perfecting himſelf in the pronunciation, and in the ideas attached to every ſound. At length, having ſuppoſed himſelf qualified to break ſilence, he declared, that he could now ſpeak, though as yet but imperfectly. Soon after, ſome able divines queſtioned him concerning his ideas of his paſt ſtate; and principally with reſpect to God, his ſoul, the moral beauty of virtue and deformity of vice. The young man, however, had not driven his ſolitary ſpeculations into that channel. He had gone to maſs indeed with his parents, had learned to ſign himſelf with the croſs, to kneel down, and to aſſume all the grimaces of a man in the act of devotion. But he did all this without any manner of knowledge of the intention or the cauſe; he ſaw others do the like, and that was enough for him. He knew nothing even of death, nor did it ever enter into his head: he led a life of pure animal inſtinct; and though entirely taken up with ſenſible objects, and ſuch as were preſent, he yet did not ſeem to have made ſuch reflections even upon theſe, as might reaſonably

ably have been expected. The young man was not, however, in want of underſtanding; but the underſtanding of a man, deprived of all commerce with others, is ſo very confined, that the mind is in ſome meaſure totally under the control of its immediate ſenſations.

"It is highly poſſible, nevertheleſs, to communicate ideas to deaf men, which they previouſly wanted, and even to give them very preciſe notions of abſtract, and general ſubjects, by means of ſigns, and of letters. A perſon born deaf, may, by time, and application be taught to read, to write, and even by the motions of the lips, to underſtand what is ſaid to him; a plain proof how much the ſenſes reſemble, and may ſupply the defects of each other. It is probable, however, that, as moſt of the motions of ſpeech are made within the mouth by the tongue, the knowledge from the motion of the lips, can be but very confined.

"On this ſubject it may not be improper to quote a fact, of which I have myſelf been a witneſs. One Mr. Pereira, a native of Portugal, who had made it his particular ſtudy to enable perſons born deaf and dumb to ſpeak, brought to my houſe, on a viſit for a fortnight, a young man who was thus unhappily circumſtanced. He was at the age of nineteen, in the month of July, 1746, when Mr. Pereira undertook to teach him to ſpeak and read. More than four months had not elapſed, when he was capable of pronouncing ſyllables and words; and in the ſpace of ten months, he perfectly underſtood, and could with tolerable diſtinctneſs pronounce, about thirteen hundred different phraſes. This education, ſo favourably begun, was interrupted for nine months, by the abſence of the maſter; who did not renew his leſſons till the month of February, 1748, when he found him far leſs intelligent than he had left him. His pronunciation was viciated; and of

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the words he had learned, as they had never been ſo far familiariſed to him as to leave a durable and permanent impreſſion, he retained not the ſmalleſt remembrance. Mr. Pereira accordingly renewed his inſtructions in the month of February, 1748; and from that time he never left him till June, 1749. At one of the meetings of the French Academy this young man was brought before us, and had ſeveral queſtions propoſed to him in writing. To theſe his anſwers, whether written or verbal, were highly ſatisfactory. His pronunciation, indeed, was ſlow, and the ſound of his voice was harſh. But at theſe defects there is little cauſe to wonder, as it is by imitation alone that our organs are enabled to form preciſe, ſoft, and well-articulated ſounds. Now, as this young man, under the united diſadvantage of being deaf and dumb from his birth, could have no idea of ſound, and, of conſequence, could receive no aſſiſtance from imitation, ſo his voice could not fail to have a certain harſhneſs, which by the aſſiduity and ſkill of his maſter, might, however, in ſome degree, be corrected afterwards.

"In the above caſe, the expedition of the maſter, and the progreſs of the pupil, who indeed ſeemed to be no wiſe deficient in point of natural vivacity and underſtanding, are an ample proof, that all perſons born deaf and dumb may, by art, be brought to converſe with other men; and I am perſuaded that, had this young man been inſtructed ſo early as at the age of ſeven or eight, he would have attained as great a number of ideas as mankind poſſeſs in general."

CHAP.

CHAP. VIII.

Of the Senſes in general.

THE animal body is compoſed of many different matters, of which ſome are inſenſible, as the bones, the fat, the blood, &c. and others, as the membranes and the nerves, appear to be active matters, on which depend the play of every part, and the action of every member. The nerves, in particular, are the immediate organ of the mind, which may be ſaid to diverſify and change itſelf according to their different diſpoſition, inſomuch, that according to their poſition, arrangement, and quality, they tranſmit to the ſoul, thoſe different kinds of ſentiment, which have been diſtinguiſhed by the name of ſenſation, and which appear, in effect, to have no reſemblance with each other. Nevertheleſs, if we attentively conſider, that all theſe external ſenſes have one common cauſe, and that they are only nervous membranes, differently placed and diſpoſed; that the nerves are the general organ of the mind; that in the animal body, no other matter but the nerves is poſſeſſed of this property, we ſhall be led to believe that the ſenſes, having all one common principle, and being only varied forms of the ſame ſubſtance, in other words being only nerves differently ordered and diſpoſed, the ſenſations which reſult from them, are not ſo eſſentially different as they at firſt appear.

The eye ought to be regarded as an expanſion of the optic nerve, or rather the eye itſelf is only the unfolding of a bundle of nerves, whoſe poſition being more exterior than that of any other nerve, has the moſt quick and the moſt delicate ſenſation. It will be moved, therefore, by the ſmalleſt particles of matter,

matter, ſuch as thoſe of light; and it will conſequently give us a ſenſation of the moſt diſtant ſubſtances, provided that they be capable to produce, or to reflect thoſe ſmall particles. The ear, which is an organ not ſo exterior as the eye, and in which there is not ſo great an expanſion of nerves, will not be poſſeſſed of the like degree of ſenſibility, nor will it be affected by parts of matter ſo minute as thoſe of light; but it will be affected by parts that are more groſs, as thoſe which form ſound, and it will give us alſo a ſenſation of the diſtant objects, which put thoſe parts of matter in motion: as they are much groſſer than thoſe of light, and as they have leſs quickneſs, they cannot extend themſelves but to ſmall diſtances; and conſequently the ear will not give us a ſenſation, but of objects much more near than thoſe which the eye communicates. The membrane, which is the ſeat of the ſmell, being ſtill leſs furniſhed with nerves than that wich compoſes the ſeat of hearing, it will only give us a ſenſation of the parts of matter which are more groſs and leſs remote, ſuch as the odoriferous particles of bodies, which may be ſaid to exhale and float in the air, as light bodies ſwim upon the water. As the nerves are alſo in leſs quantity, and are divided over the palate and the tongue, the odoriferous parts are not ſtrong enough to move this organ, and theſe oily or ſaline parts muſt detach themſelves from other bodies, and lodge themſelves upon the tongue to produce a ſenſation, which we call *taſte*. This ſenſe differs materially from that of ſmelling, becauſe this laſt ſenſe brings to us the ſenſation of things at a certain diſtance, and the taſte cannot communicate to us any ſenſation otherwiſe than by a kind of contact which operates by the means of the fuſion of certain parts of matter, ſuch as ſalts, oils, &c. In ſhort, as the nerves are divided as much as it is poſſible, and as the ſkin affords

fords them but a very thin covering, no parts of matter ſo ſmall as thoſe, which form light, or ſound, or ſmell, or ſavour, can move them, or affect them, in a ſenſible manner; and it requires very groſs parts of matter, that is to ſay, ſolid bodies, to be able to affect them at all. Thus the ſenſe of feeling gives us no ſenſation of diſtant objects, but of thoſe only whoſe contact is immediate.

It appears, therefore, to me, that the difference which ſubſiſts between our ſenſes, is occaſioned merely by the more or leſs exterior poſition of the nerves, and of their greater or ſmaller quantity in the different parts which conſtitute the organs. It is for this reaſon, that a nerve put in motion by a ſtroke, or uncovered by a wound, gives us often the ſenſation of light, without the eye partaking of it; and from the ſame cauſe we likewiſe often experienced tinglings and ſenſations of ſounds, though the ear be not affected by any thing exterior.

When the little particles of luminous or ſonorous matters are re-united in very great quantities, they form a kind of ſolid body, that produce different kinds of ſenſations, which appear not to have any relation with the firſt; for every time that the parts which compoſe light are in very great quantities, then they affect not only the eyes, but alſo the nervous parts of the ſkin, and produce in the eye the ſenſation of light, and in the reſt of the body the ſenſation of heat, which is another kind of ſentiment different from the firſt, though it be produced by the ſame cauſe. Heat, then, is only the action of the light, which acts as a ſolid body, or as a maſs of matter in motion: the action of this maſs in m tion, is evidently perceived when we expoſe light matters to the focus of a burning glaſs; the action of the light re-uniting their communication, before even it heats them; a motion which diſturbs and diſplaces. Heat, then, acts as ſolid bodies acts upon

upon other bodies, ſince it is capable of diſplacing them in their communicating a movement of impulſion.

The like happens when the ſonorous parts are re-united in very great quantities. They then produce a very ſenſible agitation; which agitation is very different from the action of ſound upon the ear. Any violent exploſion, as a loud clap of thunder, ſhakes the houſe, ſtrikes us, and communicates a kind of trembling to all the neighbouring bodies. Sound then alſo acts as a ſolid body upon other bodies; for it is not the agitation of the air which cauſes this tremulous motion, ſince even in the time when it is made, we do not remark that it is accompanied with the wind, and that, moreover, however violent the wind may be, it does not produce ſtrokes ſtrong enough for the purpoſe. It is by this action of the ſonorous parts, that a cord in vibration ſets the next in motion; and it is by the ſtroke of the ſound, that we ourſelves feel, when the noiſe is violent, a kind of fluttering very different from the ſenſation of ſound by the ear, although it depends on the ſame cauſe.

All the difference found in our ſenſations is produced merely by the greater or ſmaller number, and by the more or leſs exterior poſition of the nerves; which is the cauſe that ſome of our ſenſes may be affected by the ſmall particles, of which there is an emanation from the bodies, as the eye, the ear, and the ſmell; others by the more groſs parts, which detach themſelves from the bodies by the means of contact, as the taſte, and others ſtill by the bodies, or even by the emanations of them, when they are ſufficiently united, and ſufficiently abundant, to form a kind of ſolid maſs, as feeling, which gives us the ſenſation of ſolidity, or fluidity, and of the heat of bodies.

A fluid differs from a ſolid, becauſe it has not any part groſs enough to admit us to graſp it, and to touch it by different ſides at one time. This is likewiſe the cauſe why fluids are liquids: the particles which compoſe them cannot be touched by the neighbouring particles but in one point, or ſo few a number of points, that no part can have any adherence with another. Solid bodies, reduced even into an impalpable powder, do not abſolutely loſe their ſolidity, becauſe the parts touching each other by many ſides, preſerve the adherence between them; and this is the reaſon why we can make them up in maſſes, and bind them together in order to graſp a greater quantity at a time.

The ſenſe of feeling is ſpread over the whole body, but it imploys itſelf differently in different parts. The ſentiment which reſults from feeling, cannot be excited otherwiſe than by the contact and immediate application of the ſuperficies of ſome foreign body to that of our own. If we apply a foreign body againſt the breaſt, or upon the ſhoulder of a man, he will feel it; that is to ſay, he will know that there is a foreign body which touches him: but he will not have a ſingle idea of the form of this body, becauſe the breaſt touching the body in a ſingle plain, or ſurface, he cannot gather from it, any knowledge of this body. It is the ſame with reſpect to all other parts of the body, which cannot adjuſt themſelves upon the ſurface of foreign bodies, and bend themſelves, to embrace at one time, many parts of their ſuperfices. Theſe parts of our body cannot, therefore, give any juſt idea of their form; but thoſe which, like the hand, are divided into many ſmall, flexible and moveable parts; and which conſequently, can apply themſelves at one and the ſame time, upon the different plains of the ſuperfices of the body, are thoſe, which, in effect, give us the ideas of their form, and of their ſize.

It is not, therefore, only becauſe there is a greater quantity of nervous tufts, at the extremity of the fingers than in any other part of the body; it is not, as it is vulgarly pretended, becauſe the hand has the moſt delicate ſenſe, that it is in effect the principal organ of feeling; on the contrary, we can ſay, that there are parts more ſenſible, and where the ſenſe of feeling is more delicate, as the eyes, the tongue, &c. but it is merely becauſe the hand is divided into many parts all moveable, all flexible, all acting at one and the ſame time, and all obedient to the will; it is, becauſe, it is the only organ which gives us diſtinct ideas of the form of bodies. Feeling is no more than a contact of ſuperficies: let us compute the ſuperficies of the hand, and the five fingers, and we ſhall find it greater in proportion than that of any other part of the human body, becauſe there is not any one which is ſo greatly divided. Thus, it firſt poſſeſſes the advantage of being able to preſent to foreign bodies a larger ſuperficies and next, the fingers can extend themſelves, ſhorten themſelves, fold themſelves, ſeparate themſelves, join themſelves, and adjuſt themſelves to all kinds of ſurfaces. Another advantage which ſuffices to render this part the organ of this exact and preciſe ſenſe, which is neceſſary to give us the idea of the form of bodies, is, that if the hand had ſtill a greater number of parts; if, for example, were it divided into twenty fingers, which fingers ſhould have a greater number of articulations and movements, it is not to be doubted but that the ſenſe of feeling would but be infinitely more perfect in this conformation than it is at preſent; becauſe, this hand could then apply itſelf much more immediately and more preciſely to the different ſurfaces of the body; and if we ſhould ſuppoſe that it were divided into an infinity of parts, all moveable and flexible, which could all apply themſelves at one time to

every

every point of the ſurface of the body, ſuch an organ would be a kind of univerſal geometry, (if I may be allowed the expreſſion) by the aſſiſtance of which we ſhould have, even in the very moment of the touch, exact and preciſe ideas of the figure of bodies, and of the difference, even infinitely ſmall, of theſe figures. If, on the contrary, the hand were without fingers, it could give us but very imperfect notions of the moſt palpable objects; and we ſhould have but a very confuſed knowledge of the objects which ſurround us; or, at leaſt, we ſhould require much more experience and time in order to obtain it. Animals which have hands, appear to be the moſt acute: apes do things ſo reſembling the mechanical actions of man, that it ſeems as if they had the ſame ſucceſſion of corporeal ſenſation for the cauſe of them. Animals, which are deprived of this organ, cannot have any knowledge diſtinct enough of the form of things; as they cannot graſp any object, and as they have not any part divided and flexible enough to be able to adjuſt itſelf upon the ſuperfices of bodies, they certainly have not any preciſe notion of the form, any more than of the ſize of them. 'Tis for this reaſon that we often ſee them in ſuſpenſe, or frightened at the aſpect of objects which they ought to be the beſt acquainted with, and which are the moſt familiar to them. The principal organ of their feeling is the muzzle, becauſe this part is divided in two by the mouth and becauſe the tongue is another part, that ſerves them at the ſame time to touch bodies which we ſee them turn and turn again before they take between their teeth. It may alſo be conjectured, that animals, which, as the ſcuttle-fiſh, the polypus, and many inſects, have a great number of arms or paws which they can unite and join, and with which they can ſeize by different places, foreign bodies; that theſe animals, I ſay,

have

have an advantage over others, and that they know and chuſe much better, thoſe things which agree with them the beſt. Fiſhes whoſe bodies are covered with ſcales, and which cannot bend themſelves, muſt be the moſt ſtupid of all animals; for they cannot have any knowledge of the form of bodies, ſince they have not any means whereby they can graſp them. Beſides the impreſſion of the ſenſe muſt be very weak, and that ſenſe very obtuſe, ſince they cannot feel, but through the ſcales. Thus all animals, whoſe bodies have no extremities that can be regarded as divided parts, as arms, legs, paws, &c. will have much leſs ſenſe of feeling than others. Serpents, however, are leſs ſtupid than fiſhes, becauſe although they have no extremities, and are covered with a hard and ſcaly coat, they have the faculty of bending their bodies many ways upon foreign bodies, conſequently, of ſeizing them, in ſome faſhion or other, and of touching them much better than thoſe fiſhes can poſſibly do, whoſe bodies are unpliable.

The two great obſtacles to the exerciſe of the ſenſe of feeling, then, are, firſt, the uniformity of the figure of the body of the animal, or what is the ſame thing, the defect of the different divided and flexible parts; and ſecondly, the cloathing of the ſkin whither with hair, feathers, ſcales, webbs or ſhells. The more this cloathing is hard and ſolid, the leſs the ſentiment of feeling will be; and on the contrary, the more the ſkin is fine and thin, the more the ſenſe will be quick and exquiſite. Women, among the other advantages, they poſſeſs over men, have their ſkin more fine, and the ſenſe of feeling more delicate.

The fœtus in the womb of the mother, has a very delicate ſkin; muſt therefore feel every exterior impreſſion in the moſt acute manner; but as it ſwims in a liquid, and as liquids receive and break the action of all the cauſes which may occaſion any

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ſhock, it can but very ſeldom be injured, and only by the moſt violent ſhocks, or efforts. It poſſeſſes, then, very little opportunity to exerciſe even the ſenſe of ſeeing, which depends ſolely on the fineneſs of the ſkin, and which is common to all the body. As it cannot make any uſe of its hands, it cannot have any ſenſaton, nor can it acquire any knowledge in the womb of its mother; unleſs we ſhould ſuppoſe that, it can touch with its hands the different parts of its body, as, the face, the knees; for, indeed we often find, the hands of the Fœtus open or ſhut applied to its face.

In a new-born infant, the hands remain as uſeleſs in the fœtus, becauſe it is not permitted to make uſe of them till the end of ſix or ſeven weeks, the arms being ſwaddled up with all the reſt of the body till that time. To aſſign a reaſon for the eſtabliſhment of this cuſtom would be difficult; it is certain, that we retard by it, the unfolding of this important ſenſe, on which all our knowledge depends; and that we ſhould act more wiſely, were we to allow the infant the free uſe of its hands the moment of its birth. It would then ſooner acquire the firſt notions of the form of things; and who knows how far our firſt ideas have an influence over our ſubſequent ones? One man does not, perhaps, poſſeſs more ingenuity or capacity than another; but becauſe in his earlieſt infancy he made a greater, and a readier uſe of this ſenſe. As ſoon as children are indulged with the liberty of their hands, they preſently bring them into action, and are fond of touching whatever is preſented to them. They are ſeen to amuſe themſelves, and take a pleaſure in handling every thing they are capable of graſping; they ſeem as if they were endeavouring to find out the form of bodies, by touching them on every ſide; and for a conſiderable time, they amuſe themſelves in this manner, or rather they inform themſelves of new objects. In the reſt of our life we ourſelves if

we reflect upon it, amuſe ourſelves in a different method than in doing, or in ſeeking to do any thing that is new.

It is by the touch alone, that we can acquire any complete and certain intelligence; and it is by it alone, that all the other ſenſes are prevented from being perpetual ſources to us of illuſion, and of error. But in what manner is this important ſenſe developed? In what manner are our firſt ideas attained? Have we not forgotten every thing that paſſed during the cloud of infancy? How ſhall we trace our thoughts back to their origin? Even in attempting thus to trace them, is there not preſumption? There is; and, were the object in view of leſs importance, with juſtice might it be ſtigmatized.

Let us ſuppoſe, then, a man newly brought into exiſtence, whoſe body and organs are already perfectly formed, but who, awaking amidſt the productions of Nature, is an utter ſtranger to every thing he perceives both from without, and from within. Of a man thus circumſtanced what would be the firſt emotions, the firſt ſenſations, the firſt opinions? Were he himſelf to give us a detail of his conceptions at this period, how would he expreſs them? Might it not be in ſome meaſure as follows?

"Well do I recollect that joyful, anxious moment, when I firſt became conſcious of my own exiſtence. I knew not what I was, where I was, or whence I came. On opening my eyes, what an addition to my ſurpriſe! The light of day, the azure vault of heaven, the verdure of the earth, the chryſtal of the waters, all employed, all animated and filled me with inexpreſſible delight."

"At firſt, I imagined that all thoſe objects were within me, and formed a part of myſelf. Impreſſed with this idea, I turned my eyes toward the ſun, whoſe ſplendour inſtantly dazzled and over-powered

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me. Involuntarily I cloſed my eye-lids, though not without a ſlight ſenſation of pain; and, during this ſhort interval of darkneſs, I imagined that I was about to ſink into nothing."

"Full of affliction and aſtoniſhment, I had begun to ponder on this great change, when, liſtening, I heard a variety of ſounds. The whiſtling of the wind, and the melody of the grove, formed a concert, of which the ſoft impreſſion pervaded the inmoſt receſſes of my ſoul. I continued to liſten; nor could I baniſh the perſuaſion, that all this muſic was actually within me."

So much was I engroſſed with this new kind of exiſtence, that I entirely forgot the light, that other part of my being, which I had known the firſt, till again I opened my eyes. What joy to find myſelf once more in poſſeſſion of ſo many brilliant objects! The preſent pleaſure ſurpaſſed the former, and for a time ſuſpended the charming effect of ſounds."

"I turned my eyes upon a thouſand different objects. Theſe which I ſtill conſidered as a part of myſelf, I ſoon found that I could loſe, and reſtore, at pleaſure; and with a repetition of this new power I continued to amuſe myſelf."

"I had begun to ſee without emotion, and to hear without confuſion, when a light breeze, of which the freſhneſs communicated a new ſenſation of pleaſure, wafted its perfumes to me, and excited in me a kind of additional ſelf-love."

"Agitated by all theſe different ſenſations, and impelled by the various pleaſures of my new exiſtence, I inſtantly aroſe, and in ariſing perceived myſelf moved along, as by if by ſome unknown, ſome hidden power."

"Hardly had I advanced one ſtep, when the novelty of my ſituation rendered me, as it were, immoveable. My ſurpriſe returned; for I ſuppoſed that all the objects around me were in motion: to them

I aſcribed that agitation, which I had myſelf produced by changing place; and the whole creation ſeemed once more to be in diſorder."

"I carried my hand to my head; I touched my forehead; I felt my whole frame. Then it was that I firſt conceived my hand to be the principal organ of my exiſtence. All its informations were ſo diſtinct, ſo perfect, and ſo ſuperior to what I had experienced from the other ſenſes, that I employed myſelf for ſome time in repeating its enjoyments. Every part of my body, which I touched with my hand, ſeemed to touch my hand in turn, and actually gave back ſenſation for ſenſation."

"It was not long before I perceived that this faculty was expanded over my whole frame, and before I began to diſcover the limits of my exiſtence, which, at firſt, I had ſuppoſed of an immenſe extent, and diffuſed over all the objects I ſaw."

"Upon caſting my eyes upon my body, and ſurveying my own form, I conceived it to be of a ſize ſo enormous, that all the objects, which had hitherto ſtruck my eyes, ſeemed to be, in compariſon, as ſo many luminous particles. I gazed upon my perſon with pleaſure. I examined the formation of my hand, and all its motions; and the former appeared to me more or leſs large, in proportion as it was more or leſs diſtant from my eyes. On bringing it very near, it concealed, I found, almoſt every other object from my ſight."

"I began ſoon, however, to ſuſpect that there was ſome fallacy in the ſenſation I experienced from the eye; and I therefore reſolved to depend, for information, upon the touch, which as yet had never deceived me. This precaution was highly ſerviceable. I renewed my motions, and walked forward with my face turned toward the heavens. Happening to ſtrike lightly againſt a palm tree, I was diſmayed, and laid my hand, though not without fear,

upon this extraneous body; for extraneous I conceived it to be, as it did not return ſenſation for ſenſation, as my former feelings had done. Now it was that, for the firſt time, I perceived there was ſomething external, ſomething which did not form an actual part of my own exiſtence."

"From this new diſcovery I concluded, that I ought to form my opinion with reſpect to external objects, in the ſame manner as I had done with reſpect to the parts of my body. I reſolved, therefore, to feel whatever I ſaw; and, vainly attempting to touch the ſun, I ſtretched forth my arms, and found nothing but an airy vacuum. At every effort I made, as each object appeared to me equally near, from one fit of ſurpriſe I fell into another; nor was it till after an infinite number of trials, that I was enabled to uſe the eye as a guide to the hand, and that I perceived there were ſome objects more remote from me than others."

"Amazed and mortified at the uncertainty of my ſtate, and at the endleſs deluſions to which I ſeemed to be ſubjected, the more I reflected, the more I was perplexed. Fatigued and oppreſſed with thought, I ſeated myſelf beneath a tree, loaded with delicious fruit within my reach. On ſtretching forth my arm, the fruit inſtantly ſeparated from the branch, and I ſeized it. To graſp in my hand an entire ſubſtance, which formed no part of myſelf, pleaſed me. When I held it up, its weight, though in itſelf trivial, ſeemed, however, like an animated impulſe, to incline it to the earth. In conquering this reſiſtance I found another, and a greater pleaſure."

"I held the fruit near my eye, and I conſidered its form, and its colours. Its fragance prompted me to carry it nearer and nearer, and with eagerneſs did I inhale that fragrance. The perfume invited my ſenſe of taſting, which I found to be ſuperior to

that of ſmelling. What ſavour, what novelty of ſenſation, did I now experience. Nothing could be more exquiſite. What before had been pleaſure, was now heightened into luxury. The power of taſting gave me the idea of poſſeſſion. I imagined that the ſubſtance of this fruit had become a part of my own ſubſtance, and that I was impowered to tranſform things without me at will."

"Charmed with the idea of this new power, and incited by the ſenſations I had already experienced, I continued to pluck the fruit; nor did I think any labour too great for the ſatisfaction of my taſte. At length, however, an agreeable languor ſtealing upon my ſenſes, my limbs became heavy, and my ſoul ſeemed to loſe its activity. My ſenſations, no longer vivid and diſtinct, preſented to me only feeble and irregular images. In the inſtant, as it were, my eyes, become uſeleſs, cloſed; and my head, no longer borne up by the ſtrength of the muſcles, ſunk back, and found a ſupport upon the verdant turf beneath me."

"To every thing around me I was now loſt, and inſenſible. Of my very exiſtence I retained not the ſmalleſt ſenſation. How long I continued thus aſleep, I know not; for as yet I had not formed the ſmalleſt idea of time. My awaking appeared like a ſecond coming into exiſtence; and the amount of my ſenſations was, that, of this exiſtence, there had been a certain interruption. The annihilation I had experienced produced in me a ſenſation of fear; and I began to conclude that I was not to exiſt for ever."

In this ſtate of doubt and perplexity, I alſo began to entertain other ſuſpicions, and to apprehend that ſleep had robbed me of ſome of my late powers; when, turning around in order to reſolve my doubts, with what aſtoniſhment did I behold another being, formed like myſelf, and like myſelf ſtretched upon

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the ground! I took it for another part of myſelf; and I imagined, that, far from having loſt any thing during my late ſtate of annihilation, my exiſtence was in reality doubled."

"Over this new being I carried my hand, and found, with rapture and aſtoniſhment found, that it was not a part of myſelf, that it was ſomething more, ſomething better than me; nor could I help ſuppoſing that my exiſtence was about to be transfuſed entirely into this, my other half. New ideas and new paſſions now aroſe, took poſſeſſion of my ſoul, and excited my curioſity. Love ſerved to complete that happineſs which was begun in the individual, and every ſenſe was gratified in its full variety."

CHAP. IX.

Of the Varieties in the Human Species.

EVERY thing which has been hitherto advanced, relates to man, as an individual. The hiſtory of the ſpecies requires a ſeparate detail, of which, the principal facts can only be derived from the varieties that are found in the inhabitants of different regions. Of theſe varieties, the firſt, and the moſt remarkable, is the colour, the ſecond is the form and ſize, and the third is the diſpoſition. Conſidered in its full extent, each of theſe objects might afford ſcope for an ample treatiſe. Our remarks, however, ſhall be general, and confined to ſuch points as have been eſtabliſhed on undoubted teſtimony.

In examining the ſurface of the earth, and beginning our enquiries from the North, we find in Lapland, and in the northern parts of Tartary, a race of ſmall-ſized men, whoſe figure is uncouth, and whoſe phy-

phyſiognomy is as wild, as their manners are unpoliſhed. Though they ſeem to be of a degenerate ſpecies, they yet are numerous, and the countries they occupy are extenſive.

The Laplanders, the Danes, the Swedes, the Muſcovites, the inhabitants of Nova-Zembla, the Borandians, the Samoeids, the Oſtiacs of the old continent, the Greenlanders, and the ſavages to the North of Eſquimaux Indians of the new continent, appear to be of one common race, which has been extended and multiplied along the coaſts of the northern ſeas, and over deſerts, conſidered as uninhabitable by every other nation. In theſe countries, the viſage is large and broad, the noſe is flat and ſhort, the eyes are of a yellowiſh brown inclining to black, the eye-lids are drawn toward the temples, the cheek-bones are extremely prominent, the mouth is very big, the lower part of the countenance is very narrow, the lips are thick and turned outward, the voice is ſhrill, the head is bulky, the hair is black and ſtraight, and the ſkin is tawney. They are ſmall in ſtature, and, though meagre, they yet are of a ſquat form. In general, their ſize is about four feet, nor do the talleſt exceed four feet and a half. Among theſe people, if there is any difference to be found, it depends on the greater or leſs degree of deformity. The Borandians, for example, are of a ſize ſtill more diminutive than the Laplanders. They are alſo more tawney; and their legs, inſtead of being ſlender, like thoſe of the latter, are groſs and bulky. The form of the Samoeids is more ſquat than that of the Laplanders; their head is larger, their noſe is longer, their complexion is more dark, their legs are more ſhort, their hair is more long, and their beard is more ſcanty. Of all the different tribes already mentioned, the Greenlanders have the moſt tawney ſkin: its colour is that of a deep olive; and

and it is even pretended, that of the inhabitants of this country, ſome there are not a degree leſs black than thoſe of Ethiopia. Throughout them all too, it is to obſerved, the women are as unſeemly as the men; and ſo nearly do they reſemble each other, that, at firſt, it is hardly poſſible to diſtinguiſh the ſex. The women of Greenland, are of a ſize very ſmall, but well-proportioned: their hair is more black, and their ſkin leſs ſoft, than thoſe of the Samoeid women; their breaſts alſo are ſoft, and of ſuch length, that children are able to receive the nipple, which is of a jet-black, over the mother's ſhoulder. Some travellers ſay, that they have no hair but upon the head, and that they are not ſubject to the periodical evacuation common to the ſex. Be this as it may, their viſage is large, their eyes are ſmall, black, and lively, and their feet, as well as their hands, are ſhort. In every other reſpect, the Samoeid and the Greenland women are ſimilar. The ſavages who live northward of the Eſquimaux Indians, and even in the northern parts of Newfoundland, bear a reſemblance to theſe Greenlanders: their eyes, it is true, are larger; but, like them, they are of a very diminutive ſtature; and, like them, they have a flat noſe, and a viſage large and broad.

Nor is it alone in deformity, in diminutiveneſs, and in the colour of the hair and eyes, that theſe nations reſemble each other. In a great meaſure they retain alſo the ſame inclinations, the ſame manners. Incivility, ſuperſtition, and ignorance, are alike conſpicuous in them all.

The Daniſh Laplanders have a large black cat, which they make a confident of all their ſecrets, and a counſellor in all their difficulties. Among the Swediſh Laplanders, there is in every family a drum, for the purpoſe of conſulting the devil; and though the natives of theſe countries are robuſt and

nimble,

nimble, they are yet ſo timid and daſtardly, that by no inducement has it ever been found practicable to bring them into the field. Guſtavus Adolphus undertook, but undertook in vain, to form a regiment of Laplanders. From many circumſtances, indeed, there is reaſon to ſuppoſe, tha they cannot live but in their own country, and in their own manner. In travelling over the ice and ſnow, they uſe ſkates made of fir, which are in length about two feet, and in breadth about half a foot, and which are raiſed and pointed before, and faſtened to the foot by ſtraps of leather. With theſe they make ſuch diſpatch, that they eaſily overtake the ſwifteſt animals. They alſo uſe a pole, pointed with iron at one end, and rounded at the other. This pole ſerves to puſh them along, to direct their courſe, to keep them from falling, to ſtop the impetuoſity of their career, and to kill what game they overtake. With their ſkates they deſcend the ſteepeſt mountains, and ſcale the moſt craggy precipices; nor are the women leſs ſkilful in ſuch exerciſes than the men. They are all accuſtomed to the bow and arrow; and it is aſſerted, that the Muſcovite Laplanders launce a javelin with ſo much dexterity, that at the diſtance of thirty paces, they are ſure to hit a mark no larger than a ſilver crown, and with ſuch force, that it will tranſfix a human body. As hunters, their favourite purſuit is that of the ermine, the fox, the lynx, and the martin; and of theſe animals, they barter the ſkins for their favourite articles of luxury, brandy and tobacco. Their food conſiſts principally of dried fiſh, and of the fleſh of the bear and the rein-deer. Of nothing but the bones of fiſhes, pounded, and mixed with the tender bark of the pine or birch tree, is their bread compoſed. As to their drink, it is either train-oil, or brandy; and, when deprived of theſe, their favourite beverage is water, in which juniper-berries have been infuſed.

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Engrav'd for Buffon's Natural History.



The Laplander.

Examined in a moral ſenſe, the Laplanders are found to have all the virtues of ſimplicity, and all the vices of ignorance. Immerſed in ſuperſtition and idolatry, of a ſupreme being they have not the moſt diſtant conception; nor is it eaſy to be determined which is moſt conſpicuous, the groſſneſs of their underſtanding, or the barbarity of their manners. Boys and girls, mothers and ſons, brothers and ſiſters, bathe together naked, and are in no degree aſhamed to have their nudities thus expoſed. Whether it is his wife, or his daughter, a Laplander makes her equally welcome to a ſtranger; and, when his offer is accepted, he conſiders it as no ſmall degree of honour.

In winter, the Laplanders cloath themſelves with the ſkin of the rein-deer, and in ſummer with the ſkins of birds. To the uſes of linen they are utter ſtrangers. The women of Nova-Zembla have their noſe and their ears pierced, in order to have them ornamented with pendants of blue ſtone; and alſo, as an additional luſtre to their charms, they form blue ſtreaks upon their forehead and chin. Thoſe of Greenland dreſs themſelves with the ſkin of the dog-fiſh: they alſo paint the viſage with blue and yellow colours, and wear pendants in the ears. They all live under ground, or in huts almoſt entirely covered with earth, and with the bark of certain trees, or the ſkin of certain fiſhes; and ſome form ſubterranean trenches, by which one hut communicates with another, and by which, during the winter-months, they enjoy the converſation and ſociety of their neighbours. A continued ſeries of darkneſs for ſeveral months, obliges them to illuminate their dreary abode with lamps, which they keep alive with that very train-oil they uſe as drink. In ſummer they live a little more comfortably than in winter, expoſed as they perpetually are to a thick ſmoke, which is the only device they have contriv-

ed for the deſtruction of gnats; an inſect more numerous, perhaps, in theſe regions of froſt and ſnow, than in others of the moſt ſcorching heat. Under all theſe hardſhips, they are ſubject to few diſeaſes, and they live to a prodigious age. So vigorous indeed are the old men that they are hardly to be diſtinguiſhed from the young. The only infirmity they experience, and it is an infirmity common to them all, is that of blindneſs. Perpetually as they are dazzled by the ſtrong reflection of the ſnow, in winter, and as they are inveloped in clouds of ſmoke, in autumn and ſpring, rarely, when advanced in years, are they found to retain the uſe of their eyes.

As all theſe different tribes, or nations, therefore, reſemble each other in form, in ſhape, in colour, in manners, and even in oddity of cuſtoms, they are undoubtedly of one race. The practice of offering their women to ſtrangers, and of being pleaſed that they think them worthy of their careſſes, may proceed from a conſciouſneſs of their own deformity as well as that of their women. In appearance, the woman whom a ſtranger ſcruples not to embrace, they ſcruple not to reſpect for her ſuperior beauty. At any rate, certain it is, that, however remote, or ſeparated from each other, the cuſtom is general in all the above countries. We even meet with it among the Crimean Tartars, among the Calmoucks, and among ſeveral other nations of Siberia, and of Tartary, where perſonal deformity is almoſt as conſpicuous as in thoſe of the North. In all the neighbouring nations, on the other hand, in China, for example, and in Perſia *, where the women are

* La Boulaze tells us, that, in order to prevent all cauſe of jealouſy, when the women of Schach die, the place of their interment is induſtriouſly kept ſecret, in like manner as the ancient Egyptians, that there might be no temptation to the ſurgeons, delayed the embalment of their wives for ſeveral days after their deceaſe.

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remarkable for beauty, the men are alſo remarkable for jealouſy.

In examining the different nations that adjoin to this extenſive territory, which the race of Laplanders occupy, we ſhall find that they have no affinity to this laſt race. Alone are they reſembled by the Oſtiacs, and the Tonguſans, whoſe ſituation is to the ſouth, and ſouth-eaſt of the Samoeids. The Samoeids, and the Borandians, bear no reſemblance to the Ruſſians; nor do the Laplanders to the Finlanders, the Goths, the Danes, or the Norwegians. The Greenlanders are likewiſe entirely different from the Savages of Canada. Theſe are tall and well-proportioned; and, though different from each other, they are yet infinitely more ſo from the Laplanders. The Oſtiacs, however, ſeem to be a leſs ugly, and a leſs diminutive branch, of the Samoeids. They live on raw fiſh or fleſh; and for drink they prefer blood to water. Like the Laplanders, and the Samoeids, they are generally immerſed in idolatry; nor are they known to have any fixed abode. In fine, they appear to me to form a ſhade between the race of Laplanders and the race of Tartars. Rather, indeed, may it be ſaid that the Laplanders, the Samoeids, the Borandians, the Zemblians, and perhaps the Greenlanders, and the Savages to the north of the Eſquimaux-Indians, are Tartars reduced to the loweſt point of degeneracy; that the Oſtiacs are Tarters leſs degenerated, and that the Tonguſans, who, though to the full as ugly, are yet more ſizeable and ſhapely, are the leaſt degenerated of all. The Samoeids, and the Laplanders, live in the latitude of 68 and 69, the Oſtiacs and the Tonguſans in that of 60. As for the Tartars who are ſituated along the Volga, in the latitude of 55, they are like the Tonguſans, groſs, ſtupid, and beaſtly: like them too, they have hardly any idea of religion; nor will they receive for their wives any women but thoſe who have already had a knowledge of other men.

The Tartar country, taken in general, comprehends the greateſt part of Aſia, and in fact extends from Ruſſia to Kamtſchatka. In length it occupies from eleven to twelve hundred leagues, and in breadth from ſeven hundred to ſeven hundred and fifty, a circumference twenty times larger than that of the whole kingdom of France. The Tartars terminate China on the north and weſt, the kingdoms of Boutan and Ava, and the empires of Mogul and Perſia, even to the Caſpian ſea, on the north. They are likewiſe diffuſed along the Volga, and over the weſt coaſt of the Caſpian ſea, even to Dagheſtan. They have penetrated to the north coaſt of the black ſea, and formed ſettlements in the Crimea, and in the neighbourhood of Moldavia and the Ukraine. All theſe nations have the upper part of the viſage very large and wrinkled, even while yet in their youth. Their noſe is ſhort and flat, their eyes are little, and ſunk in the head; their cheek-bones are high; the lower part of their viſage is narrow; their chin is long and prominent; their teeth are long and ſtraggling; their eye-brows are ſo large as to cover the eyes; their eye-lids are thick; the face is broad and flat; their complexion is tawney; their hair is black. They have but little beard, have thick thighs, and ſhort legs, and, though but of middling ſtature, they yet are remarkably ſtrong and robuſt. The uglieſt of them are the Calmoucks, in whoſe appearance there ſeems to be ſomething frightful. They are all wanderers and vagabonds; and their only ſhelter is that of a tent made of hair or ſkins. Their food is, horſe-fleſh, and camel-fleſh, either raw, or a little ſodden between the horſe and the ſaddle. They eat alſo fiſh dried in the ſun. Their moſt common drink is mare's milk, fermented with millet ground into meal. They all have the head ſhaved, except a tuft of hair on the top, which they let grow ſufficiently long to form into treſſes,

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on each ſide of the face. The women, who are as ugly as the men, wear their hair, which they bind up with bits of copper, and other ornaments of the ſame nature.

The majority of theſe tribes are alike ſtrangers to religion, morality, and decency. They are robbers by profeſſion; and the natives of Dagheſtan, who live in the neighbourhood of more poliſhed countries, carry on a great traffic of ſlaves, whom they carry off by force, and afterwards ſell to the Turks and the Perſians. Their wealth conſiſts chiefly of horſes, which are more numerous, perhaps, in Tartary, than in any other part of the world. They are taught, by cuſtom, to live in the ſame place with their horſes; they are continually employed in training and exerciſing them; and at length they reduce them to ſuch implicit obedience, that they actually appear to underſtand, as it were, the intention of their rider.

In order, to attain a knowledge of the particular differences which ſubſiſt in the race of Tartars, we have only to compare the deſcriptions that travellers have given of the different tribes, of which it is compoſed. The Calmucks, who are ſituated in the neighbourhood of the Caſpian ſea, between the Muſcovites and the great Tartars, are, according to Tavernier, robuſt, but the moſt ugly, and the moſt deformed, of all human beings. Their viſage is ſo flat, and ſo broad, that their eyes, which are uncommonly ſmall, are from five to ſix inches, aſunder; and what little noſe they have is ſo flat, that two holes are barely perceivable inſtead of noſtrils. Next to the Calmoucks, the natives of Dagheſten form the ugliеſt claſs of Tartars. Though the little Tartars, or the Tartars of Nogai, who dwell near the Black Sea, are far leſs ugly than the Calmoucks; yet, like them, their viſage is broad, their eyes are ſmall, and in the form of their

body,

body, there is a great reſemblance. From their intermixture with the Circaſſians, the Moldavians, and other neighbouring nations, it is probable, indeed, that this people have loſt much of their original uglineſs. The Tartars of Siberia have, like the Calmoucks, a broad viſage, a ſhort and flat noſe, and ſmall eyes; and though their language is different, yet in other reſpects they bear ſo ſtrong a reſemblance to each other, that we cannot but conſider them as of one race. The farther we advance eaſtward, we find the features of the Tartars gradually more ſoftened; but the characteriſtics eſſential to the race ſtill remain. As for the Mongou-Tartars, who conquered China, and who, of all the above different tribes, were the moſt poliſhed, they are, to this day, the leaſt ugly, and the leaſt deformed. Like all the others, however, their eyes are ſmall; their viſage is broad and flat; their beard is ſcanty, but either black or red; their noſe is compreſſed and ſhort; and their complexion, though leſs of an olive-colour is, however, tawney. The people of the Thibet, and of the other ſouthern provinces of Tartary, are, as well as the Tartars who border upon China, of a far more agreeable aſpect than any of the others. Mr. Sanchez, formerly firſt phyſician to the Ruſſian army, a gentleman diſtinguiſhed by his abilities, and by the extent of his knowledge, has obligingly communicated to me in writing the remarks he made in the courſe of his travels through Tartary.

In the years 1735, 1736, and 1737, he viſited the Ukraine, the banks of the Don to the ſea of Zabach, and the confines of Cuba to Aſoph. He traverſed the deſarts between the countries of the Crimea and Backmut; he ſaw the Calmoucks, who wander about, without any fixed habitation, from the kingdom of Cazan to the banks of the Don; as alſo the Crimea and Nogai-Tartars, who lead

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an erratic life between the Crimea and the Ukraine, and the Kergiſſi and Tcheremiſſi-Tartars, who are ſituated to the north of Aſtracan, between the latitudes of 50 and 60.

The Crimea-Tartars, he obſerves, and the Tartars in general, between Cuba and Aſtracan, are of a middle ſize, with broad ſhoulders, nervous limbs, black eyes, and tawney complexion. The Kergiſſi and Tcheremiſſi-Tartars are of a ſize more diminutive, and of a form more ſquat, are leſs active and more corpulent. Like the former, their eyes are black, their complexion is tawney, and their viſage is ſtill larger and broader. He adds, that among theſe Tartars, there are numbers of men and women, who either reſemble them not at all, or very imperfectly; that their religion admits of polygamy, and a number of concubines; and that as their Sultans and Murzas, which are titles they give to their nobles, prefer the women of Georgia and Circaſſia for their wives, the children produced from ſuch alliances are leſs ugly, and more fair than others. There is even a whole tribe of Tartars, diſtinguiſhed by the name of Kabardinſki-Tartars, of which both the men and women are remarkable for their beauty. Of theſe Mr. Sanchez ſaw three hundred on horſe-back, who were going to enter into the ſervice of Ruſſia; and he declares that he never ſaw men of a figure more noble and manly; that their complexions are fair, freſh, and ruddy; their eyes are large, black, and lively; and their ſtature is of a becoming height, and well proportioned. He was aſſured by the lieutenant-general of Serapikin, who had made a long reſidence at Kabarda, that the women are as handſome as the men; but that this tribe, ſo different from all the Tartars around them, come originally from the Ulkraine, and removed to Kabarda ſince the beginning of the laſt century.

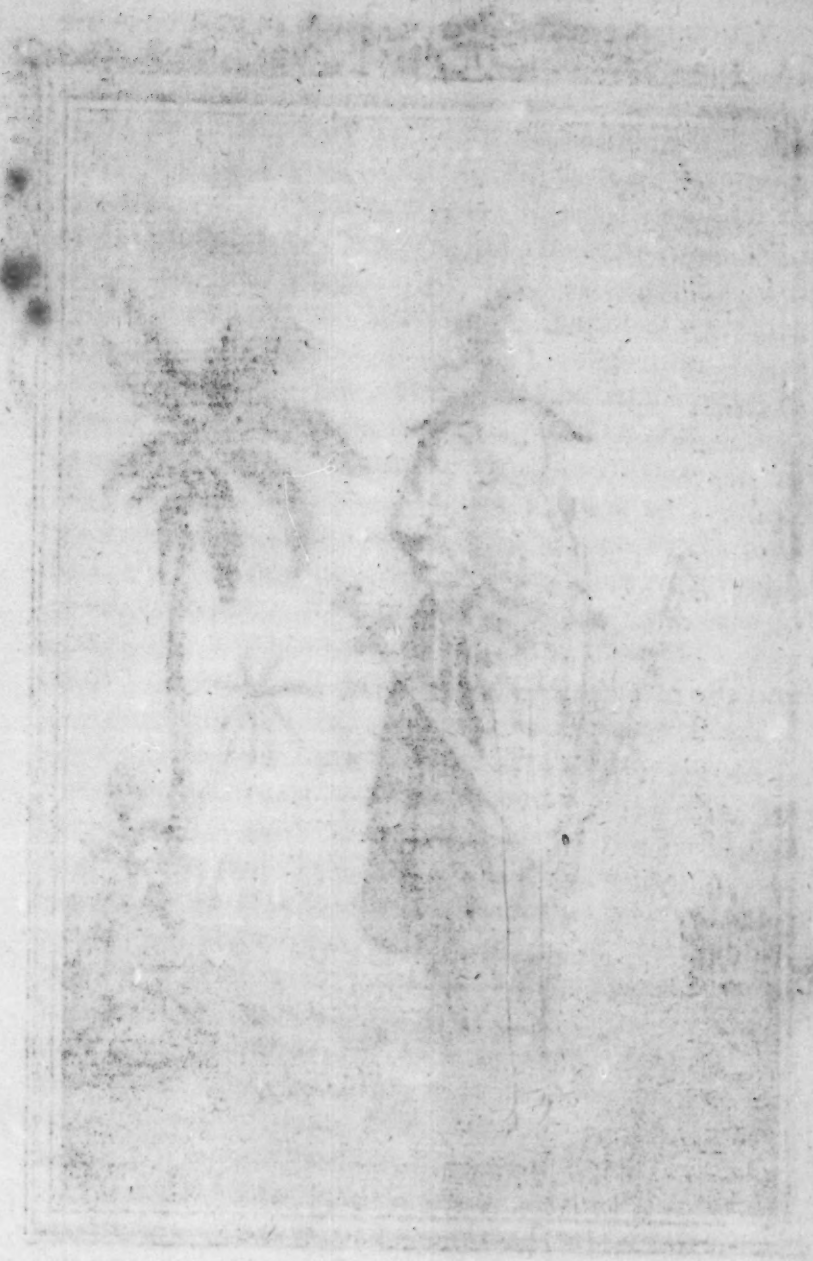
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Though the Tartar blood is intermixed, on one hand, with that of the Chineſe, and on the other, with that of the oriental Ruſſians, yet there is a ſufficient probability to ſuppoſe them of one common ſtock. Among the Muſcovites, we find numbers, the forms of whoſe viſage and body bear a ſtrong reſemblance to thoſe of the Tartars. As for the Chineſe, from the difference of their diſpoſition, their manners, and their cuſtoms, from thoſe of the Tartars, we might ſuſpect them of a diſtinct race. The Tartars, in general, are naturally fierce, warlike, and addicted to the chace, inured to fatigue, fond of independence, and to a degree of brutality cruel and uncivilized. Altogether oppoſite are the manners of the Chineſe: they are a people effeminate, pacific, indolent, ſuperſtitious, ſlaviſh, and nauſeouſly full of ceremony and compliment. If compared, however, with the Tartars, as to the figure of the body, and the features of the face, we ſhall find a ſtriking reſemblance.

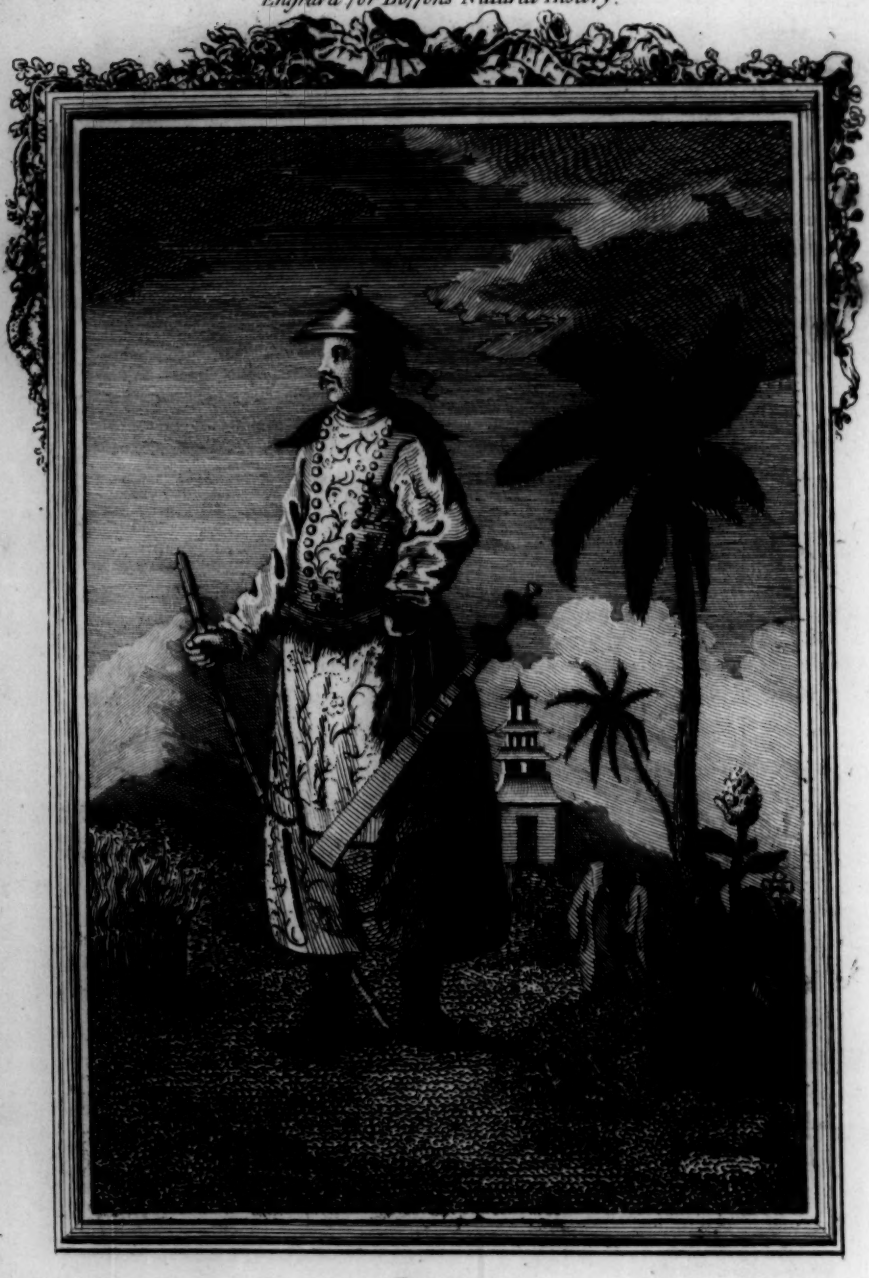
Some travellers tell us, that the limbs of the Chineſe are well-proportioned, that their body is large and fat, their viſage is large and round, their eyes are ſmall, their eye-brows are large, their eye-lids are turned upwards, their noſe is ſhort and flat; that, as for their beard, which is black, upon the chin there is very little, and upon each lip there are not more than ſeven or eight prickles; that thoſe who inhabit the ſouthern provinces of the empire, are more brown and tawney than the others; that, in colour, they reſemble the natives of Mauritania, and the more ſwarthy Spaniards; but that thoſe who inhabit the middle provinces are as fair as the Germans.

According to Dampier, and others, the Chineſe are not all, by any means, fat and bulky, though fat and bulk they conſider, indeed, as no ſmall ornament to the human figure. In ſpeaking of the iſland of St. John, which is on the coaſt of China,

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Engravd for Boffons Natural History.



THE CHINESE.

the former ſays, that the Chineſe are tall, erect, and little incumbered with fat; that their countenance is long, and their fore-head is high; their eyes are little, and their noſe is of a tolerable largeneſs, and raiſed in the middle; their mouth is of a moderate ſize, their lips are rather thin, their complexion is aſh-coloured, and their hair is black; that they have naturally little beard, and what little they have, they tear out, leaving only a few hairs upon the chin, and the upper lip.

According to Le Gentil, in his travels publiſhed at Paris, in 1725, the Chineſe have nothing diſagreeable in their countenance, and are naturally fair, eſpecially in the northern provinces. In the ſouthern ones, when neceſſarily much expoſed to the ſcorching rays of the ſun, they are ſwarthy; and generally over the whole empire, their eyes are ſmall, and of an oval form, their noſe is ſhort, their body is thick, and their ſtature is of a middling height. He aſſures us, that the women do every thing in their power to make their eyes appear little, and oblong; that, for this purpoſe, it is a conſtant practice with the little girls, from the inſtruction of the mother, forcibly to extend their eye-lids; and that, with the addition of a noſe thoroughly compreſſed and flattened, of ears long, large, open, and pendant, they are accounted complete beauties. He adds, that their complexion is delicate, their lips are of a fine vermilion, their mouth is well-proportioned, their hair is very black; but that, by the uſe of paint, they ſo greatly injure their ſkin, that, before the age of thirty, they have all the appearance of old age.

Palafox aſſures us, that the Chineſe are more fair than the oriental Tartars, their neighbours, that they have likewiſe leſs beard, but that, in every other reſpect, their viſages are nearly the ſame. It is very uncommon, he ſays, to ſee blue eyes either

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in China, or in the Philippin-iſlands; and when ſeen, it is in Europeans, or in the children of Europeans.

From the accounts of Inigo de Biervillas, it appears, that the women of China are better made than the men. Of the latter, according to him, the viſage is large, and the complexion rather yellow; the noſe is broad, generally compreſſed, and nearly of the ſhape of a medlar; and the body is of a thickneſs greatly reſembling that of a Hollander. Of the former, on the contrary, though they are generally rather fat than otherwiſe, the ſhape is, however, free and eaſy; the complexion and ſkin are admirable; and the eyes are incomparably fine. He owns, however, that, from the great pains taken to compreſs it in their infancy, there are few to be ſeen, of whoſe noſe the ſhape is even tolerable.

All the Dutch travellers allow that the Chineſe have, in general, a broad countenance, ſmall eyes, flat noſe, and hardly any beard; that the natives of Canton and the whole of the ſouthern coaſt, are as tawney as the inhabitants of Fez, in Africa; but that thoſe of the interior provinces are for the moſt part fair. Now, if we compare together the deſcriptions we have already given of the Chineſe and the Tartars, hardly will a doubt remain, that they originate from one ſtock, and that the points in which they differ proceed entirely, either from the climate, or the mixture of races. From the accounts given by Chardin, however, we are authoriſed to think ſo. "The ſize of the little Tartars," ſays this traveller, "is commonly ſmaller than ours by four inches, and thicker in the ſame proportion. Their complexion is of the colour of copper; their viſage is flat, large, and ſquare; their noſe is compreſſed, and their eyes are little. Now as theſe are exactly the features of the inhabitants of China, I have found, after the moſt minute inveſtigation, that there is the ſame conformation

mation of viſage and body throughout the nations to the Eaſt and the North of the Caſpian ſea, and to the Eaſt of the peninſula of Malacca. From this circumſtance I have ſince concluded, that however different they may appear, either in their complexion or their manners, they proceed from one ſtock. As to the former, it depends entirely upon the quality of the climate, and the food; and as to the latter, they, in like manner, are determined by the nature of the ſoil, and by the greater or leſs degree of opulence."

Father Parennin, who lived ſo long in China, and whoſe obſervations on the inhabitants are ſo accurate and ſo minute, tells us, that the weſtern neighbours of the Chineſe, from the Thibet northward to Chamo, ſeem to be different from the Chineſe themſelves, in manners, in language, in phyſiognomy, and in external conformation; that they are a people rude, ignorant, and ſlothful; and, that when any of theſe Tartars go to Pekin, and the Chineſe are aſked the reaſon of this difference, they anſwer that it proceeds from the water and the ſoil; in other words, that it is the nature of the country, which produces this change upon the body, and even upon the diſpoſition, of the inhabitants. He adds, that this remark ſeems to be more applicable with reſpect to China, than to any other country he ever ſaw; that he remembers to have followed the emperor northward into Tartary, to the latitude of 48; and that he found Chineſe from Nanquin ſettled there, whoſe children had become actual Mongous, being bow-legged, with their head ſunk into their ſhoulders, and of an aukwardneſs, a deformity, a ſlovenlineſs, which created the greateſt diſguſt.

So ſtrongly do the Japaneſe reſemble the Chineſe, that we can hardly ſcruple to rank them in the ſame claſs. As being inhabitants of a more ſouthern climate, they only differ from them in being more yellow, or more brown. In general, their ſtature is con-

tracted, their face, as well as their noſe, is broad and flat, their hair is black, and their beard is little more than perceptible. They are haughty, fond of war, full of dexterity and vigour, civil and obliging, ſmooth-tongued, and courteous, but fickle and vain. With aſtoniſhing patience, and even almoſt regardleſs of them, do they ſuſtain hunger, thirſt, cold, heat, fatigue, and all the other hardſhips of life. Their ceremonies, or rather grimaces, in eating, are numerous and uncouth. They are laborious, are very ſkilful artificers, and, in a word, have nearly the ſame diſpoſition, the ſame manners, and the ſame cuſtoms, as the Chineſe.

One cuſtom which they have in common, and which is not a little fantaſtic, is, ſo to contract the feet of the women, that they are hardly able to ſupport themſelves. Some travellers mention, that in China, when a girl has paſſed her third year, they break the foot in ſuch a manner, that the toes are made to come under the ſole; that they apply to it a ſtrong water, which burns away the fleſh; and, that they wrap it up in a number of bandages, till it has aſſumed a certain fold. They add, that the women feel the pain of this operation all their lives; that they walk with great difficulty; and that their gait is to the laſt degree ungraceful. Other travellers do not ſay that they break the foot in their infancy, but that they only compreſs it with ſo much violence as to prevent its growth; but they unanimouſly allow, that every woman of condition, and even every handſome woman,, muſt have a foot ſmall enough to enter, with unneceſſary eaſe, the ſlipper of a child of ſix years old.

The Japaneſe and the Chineſe therefore, proceed from the ſame ſtock, and differ from the Tartars rather in their manners; for the civilization of which, we muſt recur to a very diſtant period of antiquity than in their figure. To this civilization, the excellence

lence of their ſoil, the mildneſs of their climate, and their vicinity to the ſea, have perhaps greatly contributed; while the Tartars, from their inland ſituation, being debarred all commerce with other nations, and ſeparated from them by high mountains, have remained wanderers over their vaſt deſarts, which are ſituated under a ſky to the laſt degree inclement, eſpecially toward the North. As the country of Yeco, which is to the North of Japan, and of which, from its ſituation, we might expect the climate to be temperate, is, however, exceedingly cold, barren, and mountainous, ſo we find its inhabitants to be altogether different from thoſe of China and Japan. They are ignorant, brutal, without manners, and without arts. Their body is ſhort and thick; their forehead is flat; and their complexion, though yellow, is rather leſs ſo, however, than that of the Japaneſe. Over the body, and and even the viſage, there is much hair; they live like the ſavages, and their food conſiſts of the oily parts of whales, and other fiſhes. They are to the laſt degree indolent and ſlovenly: their children go almoſt naked; nor have their women ever yet deviſed any external ornament beyond that of painting their eye-brows and lips of a blue colour. The ſole occupation, the ſole pleaſure, of the men, are hunting and fiſhing; and though they have, indeed, ſome cuſtoms ſimilar to thoſe of the Japaneſe, as that of quavering when they ſing, yet, in general, they bear a much more ſtriking reſemblance to the northern Tartars, or to the Samoeids, than to the Japaneſe.

If we now examine the ſouthern, and the weſtern nations adjacent to China, we ſhall find, that the Cochinchineſe, who inhabit a mountainous region to the ſouthward of China, are more tawney and more ugly than the Chineſe; and that the Tunquineſe, whoſe country is more fertile, and whoſe climate

mate is more mild, are, in every reſpect, proportionally more handſome.

According to Dampier, the Tunquineſe are generally of a middling height; and though their complexion is tawney like that of the Indians, yet their ſkin is ſo delicate and ſmooth, that the ſmalleſt change is perceptible upon their conntenance, when they happen either to grow pale, or to redden; a circumſtance in which they eſſentially differ from all the other Indians. In common, their viſage is flat and oval; their noſe and their lips are thick; and they uſe every art, in order to render their teeth as much as poſſible black.

Theſe nations, we ſee, do not differ much from the Chineſe. They reſemble the natives of the ſouthern provinces in colour; when they are more tawney, it is when they live in a warmer climate; and though their viſage may be leſs flat, their noſe may be leſs contracted, than thoſe of the Chineſe, we yet cannot help conſidering them as a people of one origin.

Thus it is alſo with the natives of Siam, of Pegu, of Aracan, of Laos, &c. Of all theſe the features have a conſiderable reſemblance with the features of the Chineſe; and though they differ from them more or leſs in point of colour, yet their affinity to the Chineſe is greater than to the other Indians. The ſize of the Siameſe is rather ſmall than otherwiſe; their body is well-proportioned; their viſage is large, and their cheek-bones are prominent; their forehead is ſuddenly contracted, and terminated in a point, in the ſame manner as the chin; their eyes are ſmall, and obliquely ſituated; the white of the eye is ſomewhat yellow; their cheeks are hollow, from the elevation of the cheek-bones; their mouth is large; their lips are thick; their teeth are black; their complexion is coarſe, and of a brown colour mixed with red, or, according to ſome travellers,

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of an aſh-colour, to which the continual ſultrineſs of the weather contributes as much as the birth; their noſe is ſhort and rounded at the point; their ears are larger than ours, and the more they are large the more they are held in eſtimation.

This taſte for long ears is highly prevalent in the eaſt; and in different places different arts are uſed to render them ſo. As for the Siameſe, however, if their ears are larger than ours they are ſo by nature. Their hair is thick, black, and ſtraight; and both ſexes wear it ſo ſhort, that it does not deſcend lower than the ear. They anoint their lips with a kind of perfumed pomatum, by which they appear more pale than they in reality are; they have little beard, and what little they have, they pluck out by the roots; nor is it cuſtomary with them to pare their nails.

Struys ſays, that the Siameſe women wear pendants in their ears of ſuch maſs and weight, that the holes through which they are faſtened become ſo large, the thumb may penetrate them. He adds, that the complexion of both ſexes is tawney; that though not tall, they are, however, ſhapely; and, that the Siameſe are in general, a mild, and a civilized people.

According to Father Tachard, the Siameſe are exceedingly alert, and have among them a number of tumblers, &c. not leſs expert and ſkilful than the European ones. He ſays, that the cuſtom they have of blackening the teeth proceeds from an idea, that it is not becoming in man to have teeth white like thoſe of the brute-creation; that it is for this reaſon they begrime them with a kind of varniſh; and that when they perform this operation, they are obliged to abſtain from all food for ſeveral days, in order that the varniſh may have time to dry, and thoroughly to adhere.

Though the inhabitants of the kingdoms of Pegu, and

and Aracan, are more black, yet they all bear a conſiderable reſemblance both to the Siameſe and the Chineſe. Thoſe of Aracan put great value upon a forehead large and flat; and, in order to render it ſo, they apply a plate of lead to the forehead of their children, the minute they are born. Their noſtrils are large, and extended; their eyes are ſmall and lively; and their ears are of ſuch length as to hang over their ſhoulders. They feed without diſguſt on mice, on rats, on ſerpents, and on fiſh, however corrupted. Their women are tolerably fair, and their ears are as long as thoſe of the men. The people of Achan, who are ſituated farther to the north than thoſe of Aracan, have alſo a flat viſage, and an olive-coloured ſkin; and ſuch is their unrefinement, that they allow their boys to go quite naked, and their girls with only a ſlight plate of ſilver over thoſe parts which nature dictates to conceal.

None of theſe nations, we ſee, differ much from the Chineſe, and all of them reſemble the Tartars in the ſmallneſs of their eyes, the largeneſs of their viſage, and the olive colour of their ſkin. In proceeding ſouthward, however, we find the features begin to change more ſenſibly. The inhabitants of the peninſula of Malacca, and of the iſland of Sumatra, are black, diminutive, lively, and well-proportioned. Though naked from the middle upward, a little kind of ſcarf excepted, which they wear ſometimes over the right, and ſometimes over the left ſhoulder, their aſpect is, however, fierce. They are naturely brave, and even formidable when they have ſwallowed a certain quantity of opium, of which they make frequent uſe, and by which when intoxicated, they are ſeized with a kind of fury.

According to Dampier, the inhabitants of Sumatra, and of Malacca, are of the ſame race. They ſpeak

ſpeak nearly the ſame language, and they have the ſame bold and haughty diſpoſition. They are of a middling ſtature; their viſage is long; their eyes are black; their noſe is of a moderate ſize; their lips are thin; their teeth are blackened.

In the iſland of Pugniatan, or Piſſagan, within ſixteen leagues of Sumatra, the natives are in ſtature tall, and of a complexion yellow, like that of the Braſilians; their hair is long and lank; and they are habituated to go completely naked. Thoſe of the Nicobar-Iſlands, which lie northward of Sumatra, are of a tawney or yellowiſh colour; and they alſo go naked. In ſpeaking of theſe laſt iſlanders, Dampier ſays, that they are tall and well proportioned; that their viſage is ſomewhat long, their hair is black and ſtraight, and their noſe is well proportioned; that the women have no eye-brows; and that it is probable they do not ſuffer them to grow. In Sombreo, an iſland north of the Nicobar iſlands, the inhabitants are very black, and they variegate the features of the face with green, yellow, and other colours.

Theſe natives of Malacca, of Sumatra, and of the little circumjacent iſlands, though different from each other, are, however, much more ſo from the Chineſe and the Tartars, and ſeem to have ſprung from another race. The inhabitants of Java, nevertheleſs, have not the ſmalleſt reſemblance to thoſe of Sumatra and Malaca, while to the Chineſe (the colour alone excepted, which, like that of the Malacas, is red mixed with black) they ſeem to be intimately related. Pigafetta deſcribes them as a people not unlike the Braſilians. Their complexion, ſays he, is coarſe, and the form of their body is ſquare; they are very muſcular, though in ſize they are neither very tall nor very ſhort; their viſage is flat; their cheeks are flabby; their eyes are ſmall; their beard is thin and ſhort. Father Tachard ſays, that the people

people of Java are well made and robuſt; that they are lively and reſolute; and that, by the extreme heat of the climate, they are obliged to go almoſt naked. From other deſcriptions it appears, that the complexion of the inhabitants of Java is of a colour neither black nor white, but purpliſh red; and that, as to diſpoſition, they are mild, familiar, and courteous.

Legat informs us, that the women of Java, who are not, like the men, expoſed to the ſcorching rays of the ſun, are leſs tawney than them; that their countenance is comely; their breaſts are prominent and ſhapely; their hands are delicate; their air is ſoft; their eyes are delicate; their ſmile is agreeable; and that there are numbers of them who dance with great elegance and ſpirit.

Of the Dutch travellers, the generality allow, that the real inhabitants of this iſland, of which indeed the property belongs to Holland, are robuſt, well proportioned, nervous, and full of muſcular vigour; that their viſage is flat, their cheek-bones are broad and prominent, their eye-lids are large, their eyes are ſmall, their hair is long, and their complexion is tawney; that they have little beard; that they wear their hair and their nails very long; and that, in order to beautify their teeth, they poliſh them with files.

In a little iſland fronting that of Java, the complexion of the women is tawney, their eyes are ſmall, their mouth is large, their noſe is compreſſed, and their hair is long and black.

From all theſe accounts we may infer, that the inhabitants of Java are greatly ſimilar to the Tartars and to the Chineſe; while thoſe of Malacca, of Sumatra, and of the neighbouring little iſlands, differ from them equally in the features of the face, and in the form of the body. This may have very naturally happened; for as the peninſula of Malacca, and the iſlands of Sumatra and Java, as well as of all

all the other islands of the Indian Archipelago, must have been peopled by the nations of the neighbouring continents, and even by the Europeans, of whom numbers settled there three hundred years ago, there must be a very great variety in the inhabitants, both with respect to the features of the visage and the colour of the skin, the form of the body and the proportion of the limbs. In the very island of Java, for example, there is a people called the *Chacrelas*, who are altogether different, not only from the other inhabitants of the island, but even from all the other Indians. Of these Chacrelas the complexion is white and fair, and the eyes are weak; so weak, indeed, that, incapable of supporting much light, they go about with them lowered and almost closed till night, when their vision becomes more strong.

According to Pyrard, all the inhabitants of the Molucca-islands are similar to those of Sumatra and Java in manners, in mode of living, in habits, in language, in colour. According to Maldelslo, the men are rather black than tawny, and the colour of the women is more fair. They have all, he says, hair black and straight, eyes large, eye-brows and eye-lids thick, and a body vigorous and robust. They are also nimble and active; and though their hair very soon becomes grey, they yet live to a great age. Each island, he farther remarks, has its particular language; nor can it be doubted but that they have been peopled by different nations. The inhabitants of Borneo, and of Baly, he adds, are of a complexion rather black than tawney; but, according to other travellers, it is only brown like that of the other Indians. Careri says, that the inhabitants of Ternato are of the same colour as those of Malacca; in other words, a little more brown than those of the Philippin-islands; that their countenance is comely; that the men are more shapely

than the women; and that both beſtow particular care upon their hair.

The Dutch travellers tell us, that the natives of the iſland of Banda are remarkable for longevity; that they have ſeen one man at the age of one hundred and thirty, and numbers on the verge of that period; that, in general, they are indolent and inactive; and that, while the men amuſe themſelves in ſauntering abroad, the women are ſubjected to all the offices of labour at home. Dampier obſerves of the natives of the iſland of Timor, which is one of thoſe moſt adjacent to New Holland, that they are of a middling ſize, and of an erect form; that their limbs are ſlender, their viſage is long, their hair is black and briſtly, and their ſkin is exceedingly black; that they are alert and nimble, but ſuperlatively indolent and ſlothful. He adds, however, that the inhabitants of the Bay of Laphao are for the moſt part tawney, or copper-coloured

In turning northward we find Manilla, and the other Philipin-iſlands, of which the inhabitants are perhaps more intermixed, than thoſe of any other region in the univerſe, by the alliances they have formed with the Spaniards, the Indians, the Chineſe, the Malabars, the Blacks, &c. Theſe Blacks, who live in the rocks and woods of Manilla, differ intirely from the other inhabitants: of ſome the hair is ſhort and frizly, like that of the Negroes of Angola, and of others it is long. The colour of their viſage is like that of the other Negroes; and in ſome it is rather more black than in others. According to Gemelli Careri, there are numbers among them, who, like the iſlanders mentioned by Ptolemy, have tails, of the length of four or five inches. This traveller adds, that he has been aſſured by Jeſuits of undoubted teſtimony, that, in the iſland of Mindoro, which is not

not far from Manilla, there is a race of men, called *Manghians*, who have all tails of the length of four or five inches alſo, and that ſome of theſe men with tails had even embraced the catholic faith. In another place he obſerves, that the Manghians are of an olive colour, and that their hair is long.

Dampier ſays, that the inhabitants of the iſland of Mindanao, which is one of the principal, and of the moſt ſouthern, of the Philippins, are of a middling height; that their limbs are ſhort, their body is erect, their head is ſmall, their viſage is oval, their forehead is flat, their eyes are black and rather diminutive, their noſe is ſhort, their mouth is of a moderate extent, their lips are narrow and red, their teeth are black and exceedingly ſound, their hair is black and ſmooth, and their ſkin is tawney, but of a brighter yellow than the ſkin of many of the other Indians; that, in point of complexion, the women have the advantage of the men; that they are alſo more ſhapely, and have features, upon the whole, tolerably regular; that, finally, the men are in general ingenious, and alert, but ſlothful, and addicted to thievery.

Northward of Manilla is ſituated the iſland of Formoſa, of which the natives, though ſituated at no great diſtance from the coaſt of Fokian in China, diſcover, however no reſemblance to the Chineſe. According to Struys, the Formoſans are of ſmall ſtature, thoſe particularly who inhabit the mountains, and their viſage is broad. The women have large and full breaſts, and a beard like the men; their ears, naturally long, they render ſtill more ſo by certain thick ſhells, which they wear as pendants; their hair is very black, and very long, and their complexion is of different degrees yellow. Theſe iſlanders, though averſe to labour, are yet admirably ſkilled in the uſe of the javelin, and bow; they are alſo excellent ſwimmers, and when they

hey run, their ſwiftneſs is incredible. In Formoſa Struys declares, that he actually ſaw a man with a tail, above a foot long, and covered with a reddiſh hair, not unlike that of an ox; and, that this man aſſured him, if it was a blemiſh to have a tail, it was a blemiſh which proceeded from the climate, all the natives of the ſouthern part of the iſland having tails like himſelf.

I know not whether we ought to give entire credit to what Struys relates of the inhabitants of Formoſa. The laſt fact appears to be highly doubtful, or at leaſt exaggerated, and different from what other travellers have ſaid, with reſpect to theſe men with tails. It is even different from the account of Ptolemy, whom I have already quoted, and from that of Mark Paul, in his geographical deſcription, printed at Paris in 1556. From the latter we learn, that, in the kingdom of Lambry, there are mountaineers who have tails of the length of the hand. Struys ſeems to reſt upon the authority of Mark Paul, as Gemelli Careri does upon that of Ptolemy; though the tail he mentions to have ſeen is widely different in its dimenſions from the tails of the Blacks of Manilla, of the inhabitants of Lambry, and other places, as deſcribed by writers in general.

The editor of the deſcription of the iſland of Formoſa, drawn up from the memoirs of George Pſalmanazar, and publiſhed at Amſterdam, in 1705, makes no mention of a people ſo very extraordinary, and ſo very different from all others. He even ſays, that, though the climate is exceedingly hot, the women, however, thoſe eſpecially who are not neceſſarily expoſed to the ſcorching rays of the ſun, are exceedingly beautiful, and exceedingly fair; that, with certain lotions, they take particular care to preſerve their complexion; that they are equally attentive to the beauty of their teeth, which inſtead

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of rendering black, like the Japaneſe and the Chineſe, they uſe every effort to keep white; that the men are not tall, but that what they want in length, they make up in thickneſs; that they are commonly vigorous, indefatigable, ſkilful in war, and dexterous in manual exerciſes.

In their accounts of the inhabitants of Formoſa, the Dutch travellers differ from all thoſe we have yet mentioned. Mandelſlo, as well as the writers whoſe narratives were publiſhed in the collection of voyages, which paved the way for the eſtabliſhment of the Dutch Eaſt-India Company, inform us that theſe iſlanders are much more tall and bulky than the Europeans; that the colour of their ſkin is of a dark brown; that their body is hairy; that the women are low in ſtature, but robuſt, fat, and tollerably proportioned.

In few of the deſcriptions of the iſland of Formoſa, then, do we find any mention of men with tails. In thoſe of the form and features of the inhabitants, authors differ alſo prodigiouſly. With reſpect to one fact they ſeem, however, to agree, though it is not perhaps leſs extraordinary than the former; namely, that the women are not allowed to bear children before the age of thirty-five, and are yet allowed to marry long before that period. In ſpeaking of this cuſtom, Rechteren thus expreſs himſelf.---"After the women are married, they muſt not become mothers till they have numbered their thirty-fifth or their thirty-ſeventh year. When they happen to be pregnant, their prieſteſſes, if it is found neceſſary, trample upon their belly, with their feet, and thus occaſion a miſcarriage as painful, if not more ſo, than the natural labour. To bear a child previous to the age preſcribed, would be not only a diſgrace, but an enormous crime. Women I have ſeen who had already miſcarried, in the above manner, fifteen or ſixteen times, and who

who were for the ſeventeenth time pregnant, when they were firſt allowed to bring a child into the world."

The Mariana-iſlands, or the Larrones, which of all the Eaſtern iſlands are the moſt remote, are inhabited by a people highly rude and uncivilized. Father Gobien ſays, that, till the arrival of the Europeans, they had never ſeen fire; that to this element, however neceſſary, they were entire ſtrangers; and that nothing could exceed their aſtoniſhment when, on the arrival of Magellan, they firſt beheld it. Their complexion is tawney, though leſs brown, and leſs clouded than that of the inhabitants of the Philippins; and in ſtrength, and robuſtneſs, they ſurpaſs the Europeans. Their ſtature is large, their body is well-proportioned; and though they feed ſolely on roots, on fruits, and on fiſh, they are yet ſo corpulent as to appear bloated. Corpulent as they are, however, for nimbleneſs and activity they are remarkable. They live to a great age; nor is it uncommon to find among them perſons who, ſtrangers to ſickneſs, have already reached their hundredth year.

In deſcribing the inhabitants of theſe iſlands, Careri ſays, that they are of a gigantic figure, corpulent, and ſo ſtrong that they can raiſe a weight of five hundred pounds upon their ſhoulders. In general, their hair is frizly, their noſe is thick, their eyes are large, and the colour of their viſage is like that of the Indians. Of the inhabitants of Guan, one of theſe iſlands, the hair is black, long, and ſtraight, the eyes are neither too large nor too ſmall, the noſe is big, the lips are thick, the teeth are moderately white, the viſage is long, the aſpect is fierce. They are alſo exceedingly robuſt; and, it is ſaid, they do not, in heighth, meaſure leſs than ſeven feet.

Southward

Southward of the Mariana-iſlands, and eaſtward of the Moluccas, we find the country of the Papous and New-Guinea, which ſeem to be the moſtſouthern of the auſtral regions. Argenſola tells us, that theſe Papous are as black as the Caffres, that their hair is frizly, and their countenance meagre and highly diſagreeable. In this country, nevertheleſs, there are people of a complexion as fair as the Germans; but of theſe white men it is remarked that the eyes are exceedingly weak and delicate. According to Le Maire, they are not only very black, but alſo very ſavage, and very brutal; they wear rings in both ears, in both noſtrils, and ſometimes alſo in the partition of the noſe; they likewiſe wear bracelets of mother-of-pearl upon the elbows and wriſts, and cover the head with a cap made of the bark of a tree. In ſhape they are well-proportioned; they have a ſufficiency of beard; their teeth are black, as is alſo their hair, which, though ſhort and frizly, is not, however, ſo woolly as that of the Negroes.

Their weapons conſiſt of clubs, ſpears, and ſabres, made of hard wood; the uſe of iron being unknown to them. They alſo employ their teeth as weapons, and bite like dogs. The women are of hideous aſpect. Their breaſts are ſo large, and ſo flabby that they cover the navel; their belly is extremely thick; their arms and limbs are extremely thin; and in their viſage they reſemble ſo many apes.

Dampier ſays, that the inhabitants of the iſland of Sabala in New Guinea are a claſs of very tawney Indians, whoſe hair is long and black, and whoſe manners are not much different from thoſe of the natives of Mindanao, and of the other oriental iſlands; but that, beſides them, it is peopled by Negroes, whoſe hair is ſhort, frizled, and cottony. In ſpeaking alſo of another iſland, which he calls *Garret-*

Denys,

Dentrecaſteaux, he ſays, that the inhabitants are black, vigorous, and well-ſhaped; that their head is large and round; that their hair, which they cut in different fashions, and tinge with different colours, as red, white and yellow, is ſhort and frizly; that their viſage is large and round, their noſe is thick and flat; that nevertheleſs their phyſognomy would not be abſolutely diſagreeable, did they not diſfigure it by thruſting a kind of peg, in length about one inch, and in breadth about four inches, acroſs the noſtrils, ſo that both ends may touch the cheek bones; and that they pierce their ears with pegs in like manner as their noſe.

According to the ſame author, the inhabitants of the coaſt of New Holland, which is in the latitude of 16, and to the ſouth of the iſland of Timor, are of all mankind, perhaps, the moſt miſerable, and the moſt upon a level with the brutes. They are tall, erect and thin; their limbs are long and ſlender; their head is large; their forehead is round; their eye-brows are thick. Their eye-lids, likewiſe, are always half ſhut; a habit they contract in their infancy, in order to ſave their eyes from the gnats, with which they are greatly incommoded; and as they never open their eyes, they cannot ſee objects at a diſtance, but by raiſing the head, as if they wanted to look at ſomething over their heads. Their noſe and their lips are thick, and their mouth is large. They pull out, it would ſeem, the two front teeth of the upper jaw; for in neither ſex, nor at any age, are they ever found to poſſeſs theſe teeth.

They have no beard; their viſage is long; nor does it contain one pleaſing feature. Their hair is not long and ſtraight, like that of the generality of the Indians, but ſhort, black, and frizly, like that of the Negroes; and like the people of Guinea their ſkin is black. Their whole clothing conſiſts of a

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bit of the bark of a tree, faſtened to the middle of the body in the form of a girdle. They have no houſes; and they ſleep in the open air, without any covering, and without aught to lie on, but the earth. They aſſociate, men, women, and children promiſcouſly, in troops, to the number of twenty or thirty. Their only food is a ſmall fiſh, which they catch, by forming reſervoirs in little arms of the ſea: to every kind of grain, or bread, they are utter ſtrangers.

The inhabitants of another part of New Holland, in the latitude of 22, or 23 ſouth, ſeem to be of the ſame race as thoſe we have now deſcribed: they are ugly to an extreme; their eyes have the ſame defect as thoſe of the others; their ſkin is black; their hair is frizly; and their body is tall and ſlender.

From all theſe deſcriptions it appears, that the iſlands, and the coaſts, of the Indian ocean are peopled by men widely different from each other. The inhabitants of Malacca, of Sumatra, and of the Nicobar iſlands, appear to derive their origin from thoſe of the peninſula of Indus; and thoſe of Java from the Chineſe, the white men excepted, who go by the name of Chacrelas, and who muſt have ſprung from the Europeans. The inhabitants of the Molucca iſlands ſeem alſo in general to have originated from the Indians of the peninſula; but thoſe of the iſland of Timor, which is ſo near to New Holland, are almoſt entirely ſimilar to the people of that country. Thoſe of the iſland of Formoſa, and of the Mariana-iſlands, who reſemble each other in ſize, in vigour, and in features, ſeem to form a race diſtinct from that of every other people around them. The Papous, and other nations in the neighbourhood of New Guinea, are real Blacks, and reſemble thoſe of Africa; though their ſituation is at a prodigious diſtance from the continent of Africa, and

ſeparated from it by a ſpace of above 2200 leagues of ſea. The inhabitants of New Holland reſemble the Hottentots. But before we attempt to draw any concluſions from all theſe relations and differences, we ought to purſue our enquiries with reſpect to the different nations of Aſia and of Africa.

The Moguls, and the other inhabitants of the peninſula of India, are not unlike the Europeans in ſhape and in features; but they differ more or leſs from them in colour. The Moguls are of an olive complexion; and yet, in the Indian language, the word *Mogul* ſignifies *White*. The women are extremely delicate, and they bathe themſelves very often: they are of an olive colour, as well as the men; and, which is quite oppoſite to what is ſeen among the women of Europe, their legs and thighs are long, and their body is ſhort. Tavernier, ſays, that, after paſſing Lapor, and the kingdom of Cachemire, the women have naturally no hair on any part of the body, and the men have hardly any beard. According to Thevenot, the Mogul women are tolerably fruitful, though exceedingly chaſte. They likewiſe ſuffer little from the pains of child-birth, and are often known to be up and abroad the day following. He adds, that in the kingdom of Decan, they are allowed to marry, and conſummate, the huſband by his tenth, and the wife by her eighth year; and at that age they not unoften have children. The women who become mothers ſo ſoon uſually ceaſe bearing, however, before they arrive at thirty; and by that period, they appear wrinkled, and marked with all the deformities of age.

The natives of Bengal are more yellow than the Moguls. In diſpoſition alſo they differ totally; their women are by no means ſo chaſte; and it is even pretended, that, of all the Indian women,

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thoſe of Bengal are the moſt laſcivious. In this country they carry on a great traffic of ſlaves, male and female. Of eunuchs they alſo make numbers, whether by a ſimple privation of the teſticles, or by a total amputation of the parts. They are a people comely and well-ſhaped, are fond of commerce, and have much mildneſs in their manners.

The inhabitants of the coaſt of Coromandel are more black than the people of Bengal: they are, at the ſame time, leſs civilized; and, in general, the common people are ſeen to go naked. Thoſe of the coaſt of Malabar are ſtill more black; their hair is black alſo, ſtraight and long; their ſize is that of the Europeans. Even in their towns, men, women, and children, bathe promiſcuouſly in public baſons ſet apart for the purpoſe of bathing. Their women wear rings in their noſe; they are married, at the age of eight; and though black, or at leaſt of a very deep brown, they yet are comely, and well-proportioned.

The cuſtoms of theſe different nations are all very ſingular, if not whimſical. The Banians eat nothing which has had life in it; they are even afraid to kill the ſmalleſt reptile, however offenſive to them; they throw rice and beans into their rivers as food for the fiſhes, and grain of different kinds upon the earth for the birds and inſects. When they meet with a hunter, or a fiſher, they beg of him inſtantly to deſiſt from his employment; if deaf to their intreaties, they offer him money for his gun, or his nets; and when no perſuaſion, no offer, will avail, they trouble the water, in order to frighten away the fiſhes, and cry with all their might, in order, in like manner, to put the birds, and other game to flight.

The Naires, of Calicut form a claſs of nobles, whoſe ſole profeſſion is that of arms. Theſe men

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are handſome, and of a comely aſpect, though their ſkin is of an olive colour and though they lengthen their years to ſuch a pitch, as to make them fall over their ſhoulders and ſometimes lower. They are alſo of an elevated height, are bold, courageous, and highly expert in military exerciſe. Theſe Naires are not allowed to have more than one wife; but the women are allowed to have as many huſbands as they pleaſe. Father Tachard ſays, that they ſometimes have not fewer than ten, whom they conſider as ſo many ſlaves, ſubjected by their beauty. This liberty of having ſeveral huſbands is a privilege annexed to nobility, from which the women of condition derive to themſelves every poſſible advantage. Thoſe of inferior rank are allowed but one huſband, though indeed they greatly comfort themſelves under this reſtraint by the careſſes of ſtrangers; with whom they carry on their illicit amours, in defiance of their huſbands, who dare not even ſpeak to them upon the ſubject. So groſſly are the mothers immerſed in ſenſualiſm, that, even in their early infancy, they proſtitute their daughters. The nobles, or Naires, ſeem to be of a race different from theſe; the latter being, men as well as women, more ugly, more yellow, more unſhapely, and more diminutive. Among the Naires, there are ſome who have one leg, and ſome who have both legs, as thick as the body of another man. This monſtrous deformity they have from their birth, not from any particular malady; and nevertheleſs they are exceedingly active. This race of men with thick legs is more numerous among the Naires, than among any of the other claſſes of Indians: they are to be found, however, in other places, and eſpecially in Ceylan, where they are ſaid to be of the race of Saint Thomas.

The inhabitants of Ceylan are not unlike thoſe of the coaſt of Malabar. They are leſs black, it is true,

true, but their ears are as large, and they deſcend as low. They are of a mild aſpect, and are naturally very nimble, alert, and lively. Their hair, which is very black, the men wear ſhort; the common people go almoſt naked; and the women, according to a cuſtom pretty general in India, have their boſom uncovered. In Ceylan there is a ſpecies of ſavages, who go by the name of *Bedas*, and who occupy a ſmall diſtrict on the north part of the iſland. Theſe Bedas ſeem to be of a race totally different from that of all the nations around them. The ſpot they inhabit is entirely covered with wood, amidſt which they keep themſelves ſo cloſely concealed, that it is with great difficulty they are diſcovered. Their complexion is fair, and ſometimes even red, like that of the Europeans. They do not ſpeak the language of Ceylan; nor indeed has the language they do ſpeak the ſmalleſt affinity to that of any of the other Indians. They have no villages, no houſes, no intercourſe with the reſt of mankind. Their arms are, the bow and the arrow, with which they deſtroy a number of boars, ſtags, and other animals; and though they never dreſs their meat, they yet ſweeten it with honey, which they poſſeſs in great abundance.

Of this tribe, which is far from being numerous, and of which every family lives ſeparated from another, we are ſtrangers to the origin. It appears to me, nevertheleſs, that the *Bedas* of Ceylan, as well as the *Chacrelas* of Java, who are both very fair and few in number, are of European extraction; it being highly poſſible, that a few European men and women might have formerly been deſerted in theſe iſlands, or thrown upon them in a ſhip-wreck, and that, in the fear of being mal-treated by the natives, they, and their deſcendants after them, might have remained in the woods, and in the mountains; where, habituated at length to a ſavage life, they

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might chooſe to perſevere in that life, and might even be delighted with it.

It is ſuppoſed, that the inhabitants of the Maldiva-iſlands are deſcended from thoſe of the iſland of Ceylan: yet they by no means reſemble each other; the latter being black, and badly formed; the former, ſhapely, and (their olive-colour excepted) little different from the Europeans. Beſides, they are a people compoſed of all nations. Thoſe of the northern parts are more civiliſed than thoſe of the ſouthern; nor is the body of the latter ſo well-formed, or the complexion ſo bright. The women, notwithſtanding they are of an olive colour, are tolerably handſome; and ſome of them there are as fair as thoſe of Europe. Their hair is univerſally black: this they conſider as a beauty; and they ſtudiouſly render it of that colour, by keeping the heads of their boys and girls conſtantly ſhaved, till the age of eight or nine years. Another beauty they conſider it to have the hair very long, and very thick; and for this purpoſe they anoint the body with a perfumed oil. Theſe iſlanders love exerciſe, and are induſtrious artiſts; they are ſuperſtitious, and greatly addicted to women; and though the ſex are particularly cautious of expoſing their boſom, they are yet exceedingly debauched, and laviſh of their favours.

In their accounts of Guzarata, the Dutch tell us, that the inhabitants are all in one degree or other yellow; that they are of the ſame ſize as the Europeans; that the women, who are very rarely expoſed to the ſcorching rays of the ſun, are rather more fair than the men; and that there are ſome little leſs ſwarthy than the Portugueſe. Mandelſlo in particular mentions, that the people of Guzarata are all of a colour more or leſs tawney or olive, according to the climate in which they are ſituated; that thoſe to the ſouth are moſt remarkably ſo; that

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there the men are vigorous and ſhapely, their viſage is large, and their eyes are black; that the women are of ſmall ſtature, but well-proportioned; that they wear their hair long, as alſo rings in their noſtrils, and large pendants in their ears. Few there are among them either hump-backed or cripple; and though ſome have a more clear complexion than others, yet they have all long and ſtraight hair. The ancient inhabitants of Guzarata are eaſily diſtinguiſhed from the others by their colour, which is much more black, and by their greater degree of ſtupidity and of barbariſm.

Of all the Portugueſe ſettlements in the Indies, Goa is allowed to be the chief; and though it may have loſt much of its former ſplendour, it is ſtill, however, a rich and a commercial city. Here it was where, at one time, more ſlaves were ſold than in any other part of the world; and where the moſt beautiful women, and damſels, from all the countries of Aſia, became the property of the higheſt bidder. Theſe ſlaves were of all colours, and were admirably ſkilled in muſic, as well as in the arts of ſewing and embroidery; but thoſe with whom the Indians were chiefly captivated, were the Caffre-girls of Moſambique, who are all black. "It is remarkable," ſays Pyrard, "that of all theſe Indian nations, the ſweat of the men, or of the women, has no bad ſmell; whereas of the negroes of Africa, both on this and on the other ſide of the Cape of Good-Hope, the ſtench, when they are in any degree over-heated, is inſupportable." He adds, that the Indian women are exceedingly fond of the European white men, and that they not only prefer them to the white men of the Indies, but to any of the Indians whatever.

The Perſians are neighbours to the Moguls, and they bear a conſiderable likeneſs to them; thoſe eſpecially who occupy the ſouthern parts of Perſia.

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The natives of Ormus, as well as of the provinces of Baſcia and Balaſcia, are very brown and very tawney; thoſe of Cheſimur, and the other provinces, in which the heat is leſs intenſe than in Ormus, are leſs brown; and thoſe of the northern provinces are tolerably white. The women who inhabit the iſlands of the Perſian gulph, are, according to the Dutch travellers, brown or yellow, and little agreeable. They have ſeveral modes and cuſtoms ſimilar to thoſe of the Indian women. Like them, for example, they have a hole formed through the cartilage of the noſe, for the admiſſion of a ring, and through the ſkin of the noſe, immediately below the eyes, for that of a gold wire. Indeed this cuſtom of piercing the noſe, in order to embelliſh it with rings and other trinkets, has extended much farther than the gulph of Perſia. Many of the women in Arabia have an inciſion made through their noſtrils for the ſame purpoſe; and with this people it is an act of gallantry for the huſband to ſalute his wife through the ring which hangs from her noſe, and which is ſometimes ſo large as to incompaſs the whole mouth.

Xenophon, in ſpeaking of the Perſians, ſays, that, for the moſt part, they were fat and groſs; Marcelin, on the contrary, ſays, that, in his time, they were meagre and thin. Olearius, who makes this remark, adds, that they are, to this day, what the laſt-mentioned author deſcribes them to be; but that they are nevertheleſs full of ſtrength and vigour. He obſerves, too, that their complexion is olive-coloured, their hair black, and their noſe aquiline.

That the Perſian blood is naturally groſs, ſays Chardin, is evident from the Guebres, who are a remnant of the ancient Perſians, and who are ugly, ill-ſhaped, and clumſy; it is evident alſo from the inhabitants of the provinces neareſt to India, who,

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as they never form any alliances but among each other, are little leſs deformed than the Guebres. Throughout the reſt of the kingdom, however, the Perſian blood has become highly refined, by the mixture of Georgian and Circaſſian blood; two nations, the moſt remarkable for the beauty of their inhabitants, of any in the world. Thus, in Perſia, there is hardly a man of diſtinction whoſe mother came not from Georgia, or from Circaſſia; and even the king himſelf is commonly, by the mother's ſide, ſprung from a native of one or other of theſe countries. As a number of years have elapſed ſince this mixture firſt took place, the figure of the female ſex has improved as well as that of the other; and the Perſian women, though ſtill inferior in beauty to the Georgian, have become, however, very comely and well-formed. With reſpect to the men, they are commonly tall, erect, freſh-coloured, and vigorous; their air is graceful, and their whole appearance is engaging. The mild temperature of their climate, and the ſobriety in which they are brought up, contribute not a little to their perſonal beauty. This they in no degree inherit from their fathers; for, without the above mixture, the men of rank in Perſia would be of all others the moſt ugly, being deſcendants of the Tartars, of whoſe deformity and unrefinement we have already had occaſion to take notice. The Perſians, on the contrary, thoſe eſpecially of the ſuperior claſſes, are a poliſhed and an ingenious people; their imagination is lively, quick, and fertile; though fond of the liberal and the mechanical arts and ſciences, they yet are ambitious of warlike honours; they are amorous and even voluptuous; in the articles of luxury they are prodigally expenſive; and, of courſe, they are alike unacquainted with œconomy, and with commerce.

Though in general tolerably ſober, they are yet immoderate devourers of fruit; and nothing is more common than to ſee one perſon eat a *man*, which is equal to our twelve pounds, of melons. Some indeed do not ſcruple to eat three or four *mans*; and thus, by an over-indulgence of their appetite for fruit, numbers loſe their lives.

Fine women of every colour are common in Perſia; as they are brought thither by merchants, ſelected on account of their beauty. The white ones come from Poland, from Muſcovy, from Circaſſia, from Georgia, and from the frontiers of Great Tartary; the tawney ones, from the territories of the Great Mogul, and from thoſe of the king of Golconda, and of the king of Viſapour; and the black ones from the coaſts of the Red Sea.

Among the inferior claſſes of women a ſtrange ſuperſtition prevails. Such of theſe as are barren, imagine, that, in order to become mothers, they have only to paſs under the dead body of a gibbeted criminal; as if the influence of a male corpſe could, even from a diſtance, communicate to them fecundity. When this expedient fails, they lie in wait for the canals which flow from the public baths, after a number of men have left them; and in theſe they wade about for a conſiderable continuance. Should the latter ſuppoſed ſpecific prove alike ineffectual as the former, their next and laſt reſource is, to ſwallow that part of the prepuce, which is cut off in the act of circumciſion; and this is the ſure, the ſovereign remedy againſt ſterility.

The inhabitants of Perſia, of Turkey, of Arabia, of Egypt, and of the whole of Barbary, may be conſidered as one and the ſame people, who, in the time of Mahomet, and of his ſucceſſors, invaded immenſe territories, extended their dominions, and became exceedingly intermixed with the original natives

natives of all thoſe countries. The Perſians, the Turks, and the Moors, are to a certain degree civiliſed; but the Arabians have, for the moſt part, remained in a ſtate of independence, which implies a contempt of laws. They live, like the Tartars, without order, without government, and almoſt without ſociety: theft, robbery, and violence are authoriſed by their chiefs; they glory in their vices; to virtue they pay not the ſmalleſt reſpect; and of all human conventions, thoſe only have they admitted, which owe their exiſtence to fanaticiſm, and to ſuperſtition.

They are a people highly inured to labour; and to labour they take eſpecial care to habituate alſo their horſes. But once in twenty-four hours do they allow this animal either to eat or drink; and though their horſes are neceſſarily meagre, they yet are excellent courſers, and ſeem, as it were, indefatigable.

In general, the Arabians live miſerably: they have neither bread nor wine; nor do they take the ſmalleſt trouble to cultivate the earth. Inſtead of bread, they uſe a few wild grains mixed up and kneaded with the milk of their camels, their ſheep, and their goats. Theſe they conduct in flocks from place to place, till they find a ſpot with ſufficient herbage for them. On this, with their wives and children, they erect their tents, and, till the herbage is conſumed, fix their reſidence. When this happens, they immediately decamp, and proceed in ſearch of more.

However harſh may be their mode of living, and however ſimple may be their food, the Arabians are yet a people very robuſt and vigorous, and are of a tolerable ſize and ſhape. But as the generality of them go intirely naked, or, at moſt, with the ſlight covering of a wretched ſhirt, their viſage and their body are not a little ſcorched by the heat of the

ſun. Thoſe of the coaſts of Arabia-Felix, and of the iſland of Socotora, are more diminutive; their complexion is either aſh-coloured, or very tawney; and in form they reſemble the Abyſſinians.

The Arabians have a cuſtom of painting their arms, their lips, and different parts of their body, of a deep blue, which they penetrate into the fleſh, by means of a kind of needle contrived on purpoſe, and of which the marks are never effaced. Strange as may appear this cuſtom, we yet find it among the Negroes alſo who traffic with the Mahommedans.

La Boullaye ſays, that the Arabian women of the deſart paint their hands, their lips, and their chin, of a blue colour; that, in their noſe, they moſtly have gold or ſilver rings, of three inches in diameter; that, though born fair, they yet loſe all their beauty by being conſtantly expoſed to the ſun; that the young girls are very agreeable, and immoderately fond of ſinging; that their ſongs are not melancholy and plaintive, like thoſe of the Turks and Perſians, but more ſtrange, as they puſh their breath with all their might, and articulate with prodigious velocity.

"The Arabian princeſſes and ladies," ſays another traveller, "are very beautiful and ſhapely; and, being always ſheltered from the ſun, their complexion is fair. The women of the inferior claſſes are not only naturally brown and tawney, but of a diſagreeable figure. They prick their lips with needles, and cover them with gun-powder, mixed with ox-gall, by which the lips are rendered blue and livid ever after. In like manner they prick the cheeks, and each ſide of the mouth and chin. They draw a line of black along the eye-lids, as alſo on the outward corner of each eye, that it may appear more expanded; for in having eyes large and prominent is made to conſiſt, indeed, the principal beauty

beauty of the Eaſtern women. In expreſſing the beauty of a woman, the Arabians ſay, 'She has the eyes of the antelope.' To this animal they always compare their miſtreſſes; and black eyes, or the eyes of the antelope, never fail, to be the burthen of their love-ſongs. Than the antelope, in fact, nothing can be more pretty; and it particularly diſcovers a certain innocent fear, which bears a ſtrong reſemblance to the modeſty, and the timidity, of a young girl. The ladies, and women newly-married, blacken their eye-brows, and make them unite on the middle of the forehead; they alſo prick their arms and their hands, and form upon them figures of a number of different animals, flowers, &c. They paint their nails of a reddiſh colour, of which the men likewiſe paint the tails of their horſes; and they wear rings in their ears, and bracelets upon their arms and legs."

To this account it may be added, that the Arabians are all jealous of their wives, and that, whether they obtain them by purchaſe or otherwiſe, they treat them with mildneſs, and even with ſome reſpect.

The Egyptians, though they live ſo near to the Arabians, though they have the ſame religion, and though they are in like manner ſubjected to the Turks, have, however, very different cuſtoms. In all the towns and villages along the Nile, for example, we meet with girls ſet apart for the embraces of travellers; and this without any obligation on the part of the latter to pay for ſuch indulgence. They have houſes always full of theſe girls; and when a rich man finds himſelf dying, as an act of pious charity, he founds an edifice of this kind, and diſburſes a ſum of money for the purchaſe of damſels to inhabit it. When within one of theſe hoſpitals a male child is born, the mother is obliged to rear him till the age of three

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or four; at one or other of which periods ſhe carries him to the patron, or his heir, who afterwards employs him as one of his ſlaves. The girls, however, remain with the mother; and, when of a proper age, they occupy her place.

The Egyptian women are very brown; their eyes are lively; their ſtature is rather low; their mode of dreſs is by no means agreeable; and their converſation is highly tireſome. They are, moreover, remarkable for bearing a number of children; and ſome travellers pretend, that the fecundity occaſioned by the innundation of the Nile, far from being confined ſolely to the earth, extends in like manner to the human, and to the animal creation. They add, that by undeniable experience it appears, that whether by drinking of the Nile, or bathing in it, in the firſt two months after its over-flow, which are thoſe of July and Auguſt, the women generally conceive; that in April and May, they are as generally delivered; and that, with regard to the animals, a cow almoſt always carries at one time two calves, a ſheep two lambs, &c.

To reconcile theſe accounts of the benign influence of the Nile with thoſe which other authors have publiſhed of the troubleſome diſorders occaſioned by it, would be a taſk of ſome difficulty. Granger ſays, that in Egypt the air is unwholeſome; that the eyes are peculiarly ſubject to diſeaſes, and thoſe ſo inveterate, that few who are attacked with them do not loſe their ſight; that in this country there are more blind people than in any other; and, that, during the increaſe of the Nile, the generality of the inhabitants are afflicted with obſtinate dyſenteries, occaſioned by the water of that river which, at the period of its over-flow, is ſtrongly impregnated with ſaline particles.

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Though the women of Egypt are commonly rather ſhort, yet the men are of a good height. Both, generally-ſpeaking, are of an olive colour; and the more we remove from Cairo, the more we find the people tawney, till we come to the confines of Nubia, where they are as black as the Nubians themſelves.

The moſt inherent defects of the Egyptians are, idleneſs and cowardice. They do nothing almoſt the whole day but drink coffee, ſmoke, ſleep, remain indolent in one place, or chatter in the ſtreets. They are highly ignorant, and are full of the moſt ridiculous vanity. Though they cannot deny but that they have loſt every thing noble they once poſſeſſed; the ſciences, the exerciſe of arms, their hiſtory, and even their language; and that, from an illuſtrious and a valliant nation, they have become a peopled daſtardly and enſlaved; they, yet ſcruple not to deſpiſe all other nations, and to take offence at the bare offer of carrying their children into Europe, in order to give them a knowledge of the arts and ſciences.

Of a diſtinct origin are the numerous nations that inhabit the coaſts of the Mediterranean between Egypt and the Ocean, as well as the extenſive territories from Barbary to mount Atlas, and beyond it. The Arabians, the Vandals, the Spaniards, and, more anciently, the Romans, and the Egyptians, peopled theſe regions with men very different from each other. The inhabitants of the mountains of Aureſs, for example, have an air and a countenance by no means ſimilar to thoſe of their neighbours; their ſkin, far from being tawney, is fair and ruddy; and their hair, inſtead of being black like that of the others, is of a deep yellow: circumſtances which have led Dr. Shaw to ſuppoſe them the particular deſcendants of the Vandals, who, on their expulſion, might have ſettled in ſome parts of theſe mountains.

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The women of the kingdom of Tripoly, though ſo near to thoſe of Egypt, have yet no reſemblance to them. The former are tall; and they even conſider length of ſtature as an eſſential article of beauty. Like the Arabian women they mark the viſage, and principally the cheeks, and the chin. As in Turkey, too, they highly eſteem red hair; and they even paint the hair of their children of a vermillion colour.

In general, the Mooriſh women affect to wear their hair to the length of their toes; thoſe whoſe hair is leſs in quantity, or in length, uſe falſe locks; and they all adorn their treſſes with ribbons. The hair of the eye-lids they tinge with the duſt of black-lead; and the dark colour which this gives to the eyes they eſteem a ſingular beauty. In this circumſtance, indeed, they differ not from the women of ancient Greece and Rome.

The greateſt part of the Mooriſh women would paſs for handſome, even among ourſelves. Of their children in general, the ſkin is exceedingly fair and delicate; and though the boys, by being expoſed to the ſun, ſoon grow ſwarthy, yet the girls, who are kept more at home, retain their beauty till the age of thirty, when they commonly ceaſe to have children. At this premature ſterility they have, however, the leſs cauſe to repine, as they are often mothers at the age of eleven, and grandmothers at that of twenty-two; and as, living as long as the European women, they commonly ſee ſeveral generations.

In reading Marmol's deſcription of theſe different nations, it is evident on the one hand, that the inhabitants of the mountains of Barbary are fair, and that, on the other, thoſe of the ſea-coaſts, and of the plains, are tawney and very brown. He ſays expreſſly, that the inhabitants of Capez, a city of Tunis, are poor people exceedingly black; that thoſe who dwell on the river Dara, in the kingdom of

of Morocco, are very tawney; and that, on the contrary, the inhabitants of Zarhou, and of the mountains of Fez, on the ſide of mount Atlas are white. He adds, that the latter are ſo little affected by cold, that even in froſt and ſnow, their dreſs is very ſlight; and through the whole year, they go with the head uncovered. With reſpect to the Numidians he ſays, that they are rather tawney than black; that the women are tolerably fair, and even luſty, though the men are meagre; but that the inhabitants of Guaden, at the extremity of Numidia, and on the frontiers of Senegal, are rather black than tawney; that, on the other hand, in the province of Dara, the women are beautiful and freſh-coloured; and that, throughout that region the Negro-ſlaves of both ſexes are numerous.

The difference, then, ſeems not to be great among the nations that dwell between the northern latitude of 20, 30, and 35, in the old continent from the empire of the Mogul to Barbary, and even from the Ganges to the weſtern coaſts of the kingdom of Morocco; if, at leaſt we except the particular varieties occaſioned by the mixture of other more northern nations, by which ſome of theſe vaſt countries were conquered and peopled. Of this territory the extent is hardly leſs than two thouſand leagues; and, though the inhabitants of it are in general brown and tawney; they are, however, tolerably handſome.

If we now examine thoſe who live in a climate more temperate, we ſhall find, that the people northward of Mogul and Perſia, as the Armenians, the Turks, the Georgians, the Mingrelians, the Circaſſians, and the Europeans at large, are of all others the moſt beautiful, the moſt fair, and the moſt ſhapely; and that, however remote Cachemire may be from Spain, or Circaſſia from France, yet

ſituated nearly at the ſame diſtance from the Equator, the reſemblance between the natives of the two former countries, as well as between thoſe of the two latter, is ſingularly ſtriking.

The people of Cachemire, ſays Bernier, are celebrated for beauty; they are as well-made as the Europeans; they have nothing of the Tartar-viſage; nor have they that flat noſe, and thoſe pig's eyes we meet with among their neighbours. The women are particularly handſome; and it is very common for ſtrangers, on their firſt appearance at the court of Mogul, to provide themſelves with wives from Cachemire, in order to have children that may be more fair than the Indians, and that may paſs for true Moguls.

The natives of Georgia are of an extraction ſtill more refined than the natives of Cachemire. In the whole of that country we find not an ugly face; and the women enjoy from Nature graces ſuperior to thoſe of any other race of women. They are tall and well-ſhaped; their waſte is exceedingly delicate, and the features of their countenance are charming. The men are likewiſe remarkably handſome; and, from their natural ingenuity, were it not counter-acted by a wretched education, which renders them highly ignorant and vicious, they might be capable of the arts and ſciences. In no country whatever, perhaps are libertiniſm and drunkenneſs carried to ſo great a pitch as in Georgia. Chardin ſays, that the clergy, as well as the laity, are exceedingly addicted to wine; that, in the character of ſlaves, they retain a number of concubines; and that at this cuſtom, as being general, and even authoriſed, no perſon takes offence. He adds, that the prefect of the Capuchins aſſured him, the *Catholicks* (thus they term the Patriarch of Georgia) had in his hearing been told, that he who, in the grand feſtivals, as thoſe of Eaſter and Chriſtmas, did not

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get drunk, was unworthy to be called a chriſtian, and ought to be excommunicated. With all their vices the Georgians are a civil and a humane people, little ſubject to paſſion, but irreconcileable enemies, when they are once provoked, and have conceived an antipathy.

"The women of Circaſſia," ſays Struys, "are alſo exceedingly fair and beautiful. Their complexion is incomparably fine; their forehead is large and ſmooth; and, without the aid of art, their eyebrows are ſo delicate, that they appear as threads of ſilk. Their eyes are large, ſoft, and yet the colour of vermillion, their mouth is ſmall and expreſſive of a ſmile, and their mouth, what it ought to be in order to form a perfect oval. Their neck and breaſts are admirably formed; their ſtature is tall, and the ſhape of their body eaſy; their ſkin, is white as ſnow, and their hair of the moſt beautiful black. They wear a little cap of a black ſtuff over which is faſtened a roller of the ſame, colour; but, what is truly ridiculous, is, that, inſtead of this roller, the widows wear the bladder of an ox, or a cow, as much as poſſible ſwelled, by which they diſfigure themſelves amazingly. In the ſummer-months, the inferior claſſes wear nothing but a ſhift, which is open down to the middle, and which is generally of a blue, yellow, or red colour. They are tolerably familiar with ſtrangers, but at the ſame time faithful to their huſbands, who are by no means inclined to be jealous of them."

Tavernier ſays alſo, that the women both of Comania and of Circaſſia, are, like thoſe of Georgia, very beautiful and very ſhapely; that they retain the freſhneſs of their colour till the age of forty-five or fifty; that they are all very laborious, and often employed in the moſt ſervile offices. In marriage, theſe people poſſeſs an uncommon degree of liberty. If it happens that the huſband is not contented with his

wife, and that he makes his complaint firſt, the lord of the manor ſends for the wife, orders her to be ſold, and provides the huſband with another wife. In like manner, if the woman complains firſt, her huſband is taken from her, and ſhe is left at her freedom.

The Mingrelians are ſaid to be altogether as beautiful, and as well-ſhaped, as either the Georgians or the Circaſſians; and indeed, theſe three nations ſeem to be of one and the ſame race. "Of the women of Mingrelia," ſays Chardin, "the air is majeſtic, and the countenance and form are admirable. They have, beſides, a look ſo engaging that attracts every beholder. Thoſe who are leſs handſome, or who are rather advanced in years, daub the eye-brows, the cheeks, the forehead, the noſe, and the chin with paint; the reſt content themſelves with painting the eye-brows, while they beſtow every poſſible attention to their dreſs, which is ſimilar to that of the Perſians. They are, lively, civil, and obliging, though full of perfidy; and there is no wickedneſs they will not put in practice, in order to obtain a lover, to preſerve him, or get rid of him. The men are likewiſe poſſeſſed of many bad qualities. They are all bred up to thievery; of this they make a ſtudy and an employment; a pleaſure and a boaſt. With infinite ſatisfaction do they relate the different depredations they have committed. For theſe they are extolled, in theſe do they place their greateſt glory. In Mingrelia, what they call fine actions, are falſhood, robbery, and murder; what they call virtuous habits are, concubinage, bigamy, and inceſt. The huſbands are little diſturbed with jealouſy; and when a huſband detects his wife in the actual embraces of her gallant, he has a right to demand a pig from him.

This is his only attonement, his only revenge; and the pig they generally eat between them. They pretend,

pretend, that it is a very good, and very laudable cuſtom to have a number of wives, and a number of concubines; becauſe thereby there is a prodigious increaſe of children, and theſe children they can ſell for ready money, or, at any rate diſpoſe of in exchange for goods or for proviſions." "It is to be remarked, at the ſame time," obſerve the ſame author, in another place: "that the Mingrelian ſlaves are not very dear. A man from the age of twenty-five to that of forty is purchaſed for fifteen crowns, and if more advanced in years, for eight or ten; a handſome girl, from thirteen to eighteen, for twenty crowns; a woman, for twelve crowns; and a child, for three, or perhaps four."

The Turks, who purchaſe a vaſt number of theſe ſlaves, are a people compoſed of ſundry different nations. From the intermixture during the cruſades of the Armenians, the Georgians, and the Turcomans, with the Arabians, the Egyptians, and even the Europeans, it is hardly poſſible to diſtinguiſh the native inhabitants of Aſia, Minor, of Syria, and of the reſt of Turkey. All we can obſerve is, that the Turkiſh men are generally robuſt, and tolerably well-made; that it is even rare to find among them perſons either hump-backed or lame; that the women are alſo commonly beautiful, well-proportioned, and free from blemiſhes; that they are very fair, becauſe they ſeldom ſtir from home; and that, when they do go abroad they are always veiled.

Among the meaneſt labourers, or peaſants of Aſia, according to Belon, there is not a woman, whoſe complexion is not freſh as a roſe, whoſe ſkin is not fair, delicate, and ſmooth as velvet. Of the earth of Chio, diluted they form a kind of ointment, with which they rub not only the body, but the viſage and the hair, before they bathe. Some likewiſe paint the eye-brows of a black colour, while

others

others eradicate them with *ruſma*, and paint to themſelves eye-brows in the form of a bow or creſcent. Theſe ſuppoſitious eye-brows are beautiful, when viewed at a diſtance; but quite the reverſe, when examined more cloſely. To the moſt remote dates, however, may the cuſtom of rendering them ſo be traced. Among the Turks, he adds, neither the men nor women wear hair upon any part of the body, the head and chin excepted; that they uſe *ruſma*, mixed with quick lime, and diluted in water, in order to expel it; that this pomatum they apply as they go into the warm bath, leaving it upon the ſkin for a few minutes; that, ſo ſoon as they begin to ſweat in thus bathing, the hair falls off by the friction of the hand, and the ſkin remains ſoft and poliſhed, as if there had never been any hair upon it. The ſame writer remarks farther, that in Egypt there is a ſhrub called *Alcanna*, of which the leaves dried and powdered, ſerve to give a tincture of yellow, and which the women throughout Turkey uſe, in order to colour their hair, their hands, and their feet. Thus they alſo tinge the hair of their little infants, both male and female, as alſo the manes of their horſes.

It has been pretended, that the Jews, who all come originally from Syria, have to this day the ſame brown complexion they had formerly. As Miſſon, juſtly obſerves, however, it is an error to ſay that all the Jews are tawney; thoſe of Portugal alone being ſo in reality. As the latter always marry one with another, the complexion of the parents is tranſmitted to the child, and thus with little diminution preſerved, through all the countries they inhabit, even thoſe of the north not excepted. Of the German Jews, on the other hand, as for example, thoſe of Prague, the complexion is not more ſwarthy than that of the other Germans.

At preſent the inhabitants of Judea reſemble the other Turks. The only difference is, that they are more brown than thoſe of Conſtantinople, or of the coaſts of the Black Sea; in like manner as the Arabians are more brown than the Syrians, their ſituation being more ſouthern.

Thus it is alſo with the Greeks. Thoſe of the northern parts are very fair, while thoſe of the ſouthern iſlands, or provinces, are brown. Generally ſpeaking, the women of Greece are ſtill more handſome and vivacious than thoſe of Turkey. To this advantage they add, that of enjoying a far greater degree of liberty. Careri ſays, that the women of the iſland of Chio are fair, handſome, lively, and very familiar with the men; that the girls ſee ſtrangers without reſtraint; and that they all have the neck uncovered. He likewiſe ſays, that the Greek women have the fineſt hair in the world, eſpecially in the vicinage of Conſtantinople; but that of thoſe, whoſe hair deſcends to the toes, the features are leſs regular.

The Greeks conſider large eyes, and elevated eyebrows, as a very great beauty in either ſex; and we may remark in all the antique buſts and medals of ancient Greece, that the eyes are of an exceſſive largeneſs, in compariſon of what we find in thoſe of ancient Rome.

The inhabitants of the iſlands of the Archipelago are, almoſt to a man, excellent ſwimmers and divers. According to Thevenot, they are trained to the practice of bringing up goods which have been ſunk into the ſea, or loſt by ſhipwreck; nor, in the iſland of Samos, has a young man any chance of obtaining a wife, unleſs he can dive under water to the depth of eight fathom. Daper, in his "Deſcription of the Iſlands of the Archipelago," ſays, twenty fathom; and he adds, that in ſome iſlands, as in Nicaria, for example, they have a ſtrange

cuſtom

cuſtom of ſpeaking to each other at a diſtance. The voice of theſe iſlanders, he affirms, is ſo ſtrong, that, in common, when aſunder a quarter of a league, and often when aſunder a whole league, they maintain an oral intercourſe, though ſlowly, and not without long interruptions; inſomuch, that, after a queſtion is aſked, the anſwer does not return for perhaps a number of ſeconds.

The Greeks, the Neapolitants, the Sicilians, the Corſicans, the Sardinians, and the Spaniards, being ſituated nearly under the ſame line, are tolerably uniform in point of complexion. Of theſe countries the people are more ſwarthy than the Engliſh, the French, the Germans, the Polanders, the Moldavians, the Circaſſians, and than all the other inhabitants of the north of Europe, till we advance to Lapland; where, as has already been obſerved, we find another race of men. In travelling through Spain, we begin to perceive a difference of colour even at Bayonne. There the women have a complexion more brown, and at the ſame time eyes more brilliant.

The Spaniards are meagre; and though rather ſhort, they yet are ſhapely. They are indeed yellow and ſwarthy; but their eyes are beautiful, their teeth are well-ranged, and their features in general are regular. Their children are born very fair and very handſome; but, as they grow up, their complexion changes ſurpriſingly: the air renders them yellow, and the ſun tawney; nor is it difficult to diſtinguiſh a Spaniard from a native of any other country in Europe. In ſome provinces of Spain, as in the environs of the river Bidaſſoa, it is remarked, that the inhabitants have ears of an immoderate ſize.

Black or brown hair begins to be rather unfrequent in England, in Flanders, in Holland, and in the northern provinces of Germany; nor is it hardly

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to be ſeen in Denmark, in Sweden, or in Poland. According to Linnæus, the Goths are of high ſtature; that their hair is ſmooth and white as ſilver; and the iris of their eye is blueiſh; that of the Finlanders, the body is muſcular and fleſhy, the hair is long, and of a yellowiſh white, and the iris of the eye is of a deep yellow.

In Sweden, the women are exceedingly fruitful. Rudbeck ſays, that they commonly bear eight, ten, or twelve children, and not unoften eighteen, twenty, twenty-four, twenty-eight, and even thirty. He adds, that, of the men, many live to the age of an hundred, ſome to that of an hundred and forty; and that there has been one Swede, who lived an hundred and fifty-ſix years, and another an hundred and ſixty-one.

This author, it is true, is an enthuſiaſt with regard to his country; and, were we to take his word for it, we ſhould conſider Sweden as, in every reſpect, the firſt country in the world. This fertility in the women does not ſuppoſe that they have a greater propenſity to love. In cold countries, the inhabitants are far more chaſte, than in thoſe which are more ſoutherly, and more warm; and though they produce more children in Sweden, the people are yet leſs amorous than thoſe of Spain and of Portugal. It is a truth univerſally known, that the northern nations have to ſo great a degree over-run the whole of Europe, that hiſtorians have diſtinguiſhed the north by the appellation of "Officina Gentium."

The author of the "Voyages Hiſtoriques de l'Europe," informs us, as well as Rudbeck, that there are more inſtances of longevity in Sweden, than in the generality of the other European nations; and that he himſelf ſaw ſeveral perſons who, he was well-aſſured, had paſſed the age of one hundred and fifty. This longevity he attributes to the ſalubrity of their

climate; and of Denmark, and its inhabitants, he makes the ſame remark. Speaking of the Danes, he farther adds, that the men are tall, robuſt, and of a lively and florid complexion; that the women are likewiſe very fair, tolerably well-made, and exceedingly prolific.

Before Czar Peter I. we are told, the Muſcovites had not emerged from barbariſm. Born in ſlavery, they were ignorant, brutal, cruel, without courage, and without manners. Men and women bathed promiſcuouſly in ſtoves heated to a degree intolerable to all perſons but themſelves; and on quitting this warm bath, they plunged, like the Laplanders, into cold water. Their food was homely; and their favourite diſhes were, cucumbers, or melons, of Aſtracan, which, in ſummer, they preſerved in a mixture of water, flour, and ſalt. From ridiculous ſcruples they refrained from the uſe of ſeveral viands, amongſt which were pigeons and veal. Yet, even at this period of unrefinement, the women were ſkilled in the arts of colouring the ſkin, of plucking out the eye-brows, and of painting artificial ones. They alſo adorned themſelves with pearls and jewels, and their garments were made of rich and valuable ſtuffs. From theſe circumſtances does it not appear, that the barbariſm of the Muſcovites was near a cloſe, and that their ſovereign had leſs trouble in poliſhing them than ſome authors have endeavoured to inſinuate? They are now a people civilized, commercial, ſtudious of the arts and ſciences, fond of ſpectacles, and of other ingenious novelties.

Some authors have ſaid, that the air of Muſcovy is ſo ſalutary, that it has never been viſited with a peſtilence. In the annals of the country, however, it is recorded, that, in the year 1421, and during the ſix ſubſequent years, the Muſcovites were ſo dreadfully afflicted with a contagious diſtemper, in-

ſomuch, that even the conſtitution of their deſcendants has been altered by it; few of the inhabitants attaining now the age of an hundred, whereas, previous to this period, numbers among them lived much longer.

The Ingrians and the Carelians, who inhabit the northern provinces of Muſcovy, and who were the original inhabitants of the country round Peterſburgh, are men of vigour, and of a robuſt conſtitution. Their complexion is generally fair; they have a conſiderable reſemblance to the Finlanders; and their language, in which there is no affinity to that of any other European nation, is the ſame.

By reflecting on the hiſtorical deſcription here given of the different European and Aſiatic nations, we ſhall find that the colour depends greatly on the climate; but that we cannot affirm it to be an abſolute conſequence of it. Indeed, there are many cauſes by which not only the colour, but even the form and the features may be influenced. Of theſe one of the principal are the food, and the manners, or the mode of living. A civilized people, who enjoy a certain degree of eaſe and freedom, and who, by the ſuperintendance of a well-regulated government, are protected from actual want and miſery, will, from this reaſon alone, be compoſed of men more handſome and more vigorous than a ſavage, and an independent nation, of which each individual, deriving no aſſiſtance from ſociety, is obliged to provide for his own ſubſiſtance; to ſuſtain alternately the exceſſes of hunger, and of a nouriſhment often unwholſome; to be one time exhauſted with labour, and another with laſſitude; to undergo the rigours of the climate, without being able to ſhelter himſelf from them; to act, in a word, more like an animal than a man. In the ſuppoſition that two nations, thus differently circumſtanced, were to live in the ſame climate, we could not doubt but

that the ſavage men would be more ugly, more tawney, more diminutive, more wrinkled, than the civilized men. Should the former poſſeſs any advantage whatever, it would conſiſt in the ſuperior ſtrength, or rather compactneſs of the body. It might likewiſe happen that, in the ſavage nation, there would be found fewer perſons hump-backed, lame, deaf, ſquint-eyed, &c. Among a civilized people, where one individual ſupports another, where the ſtronger has no power over the weaker, where the abilities of the body are are infinitely leſs eſteemed than thoſe of the mind, men thus defective live, and even multiply; but among a ſavage people, as each individual ſubſiſts, lives, defends himſelf merely by his corporeal qualities, his addreſs and his ſtrength, thoſe who are unhappily born weak and defective, or who become ſick and diſabled, ſoon ceaſe to form a part of that people.

I would admit, then, of three cauſes as jointly productive of the varieties which we remark in the different nations of the earth. The firſt is, the influence of the climate; the ſecond is, the nouriſhment; and the third is, the manners. But before we lay down the reaſons on which this opinion is founded, it is neceſſary that we ſhould deſcribe, the people of Africa, and of America, in like manner as we have already deſcribed thoſe of Europe and of Aſia.

The nations of the whole northern part of Africa, from the Mediterranean ſea to the tropic, we have already mentioned. All thoſe beyond the tropic, and between the red ſea and the ocean, to the extent of hundred, or one hundred and fifty leagues, are ſtill of the Mooriſh ſpecies; but ſo tawney, that they appear almoſt entirely black. The women, however, are rather of a leſs dark, and tolerably handſome. Among theſe Moors, there is a vaſt

number

number of Mulattoes, who are of a black ſtill more deep; their mothers being negro-women, whom the Moors purchaſed, and by whom they do not fail to have a number of children.

Beyond this territory, in the ſeventeenth or eighteenth degree of north latitude, and in the ſame line, we find the Negroes of Senegal and of Nubia, ſome in the neighbourhood of the ocean, and others of the red ſea; and after them all the other nations of Africa from the latitude of eighteen north to that of eighteen ſouth, are black, the Ethiopians, or Abyſſinians excepted. It appears then, that the portion of the globe which Nature has allotted to this race of men, contains an extent of ground, parallel to the equator, of about nine hundred leagues in breadth, and conſiderably more in length, eſpecially northward of the equator. Beyond the latitude of eighteen or twenty, there are no longer any Negroes as will appear when we come to ſpeak of the Caffres, and of the Hottentots.

By confounding them with their neighbours, the Nubians, who are nevertheleſs of a different race, we have been long in an error, with reſpect to the colour, and the features of the viſage of the Ethiopians. Marmol ſays, "that the Ethiopians are abſolutely black, that their viſage is large, and their noſe flat; and in this deſcription the Dutch travellers agree with him. The truth, however, is, that they differ from the Nubians, both in colour and in features. The ſkin of the Ethiopians is brown, or olive-coloured, like that of the ſouthern Arabians, from whom, it is probable they derive their origin. In ſtature they are tall; the features of their countenance are ſtrongly marked; their eyes are large and beautiful; their noſe is well proportioned; their lips are thin; and their teeth are white. Of the inhabitants of Nubia, on the contrary, the noſe is flat, the lips are thick and prominent, and the countenance

is

is exceedingly black. Theſe Nubians, as well as the Barbarians, their weſtern neighbours, are a ſpecies of Negroes not unlike thoſe of Senegal.

The Ethiopians are a people between the extremes of barbariſm and of civilization. Their garments are of cotton, though thoſe of the more opulent are of ſilk. Their houſes are low, and of a bad conſtruction; their lands too, are wretchedly neglected. Theſe circumſtances are owing to the behaviour of their nobles, who deſpiſe, mal-treat, and plunder, as far as in them lies, the tradeſmen and the common people. Each of theſe claſſes, however, lives ſeperate from the other, and has its own villages or hamlets. Unprovided with ſalt at home, they purchaſe it from abroad for its weight in gold. So fond are they of raw meat, that, at their feaſts, the ſecond courſe, which they conſider as the moſt delicate, conſiſts of it entirely. Though they have vines, they have yet no wine; and their uſual beverage is a ſour compoſition made with tamarinds. They uſe horſes for the purpoſe of travelling, and mules for that of carrying their merchandize. Of the arts or ſciences they have little knowledge; their language is without rules; and their manner of writing, though their characters are more beautiful than thoſe of the Arabians, is ſo imperfect, that, in order to finiſh an epiſtle, they require ſeveral days. In their mode of ſalutation there is ſomething exceedingly whimſical. Each takes the right hand of the other, and carries it to his mouth; this done, the ſaluter takes off the ſcarf of the perſon ſaluted, and faſtens it round his own body; ſo that the latter is left half naked, few of the Ethiopians wearing any thing more than this ſcarf, and a pair of cotton drawers.

In the account of Admiral Drake's voyage round the world, we find a fact, which, however, extraordinary, is not, in my opinion incredible. Accord-

ing

ing to this traveller, there is on the frontiers of the deſarts of Ethiopia, a people called the *Acridophagi*, or *Locuſt-Eaters*; a people who are black, meagre, exceedingly nimble, and more ſmaller than the others. In the ſpring, by certain hot and weſterly winds, they are viſited with an infinite number of locuſts; of which, as they are unprovided with cattle, or with fiſh, they are reduced to the neceſſity of ſubſiſting. After collecting them in large quantities, they ſalt them, and keep them for nouriſhment throughout the year. From this wretched nouriſhment two very ſingular effects are produced; the one, that they hardly live to the age of forty, and the other, that when they approach to that age, winged inſects begin to ingender in their fleſh, which at firſt create in them, a violent itchineſs, and which preſently after multiply ſo prodigiouſly, that their whole fleſh ſwarms with them. They begin by eating through the belly and the breaſt; nor do their ravages ceaſe till they have penetrated to the very bones. Thus, by devouring inſects, are theſe men devoured by them in turn. Were this fact thoroughly authenticated, it would afford a large field for reflection.

There are vaſt deſarts of ſand in Ethiopia, as well as in that large point of land, which extends even to Cape Gandafir. This country, which may be condered as the caſtern part of Ethiopia, is almoſt entirely inhabited. To the ſouth, Ethiopia is bounded by the Bedouins, and by a few other nations who follow the law of Mahomet; a circumſtance which corroborates the ſuppoſition, that the Ethiopan's are of Arabian extraction. From that country indeed, they are only ſeparated by the ſtrait of Babel-Mandel; and therefore it is highly probable, that the Arabians might have formerly invaded Ethiopia and driven the natives northward, into Nubia.

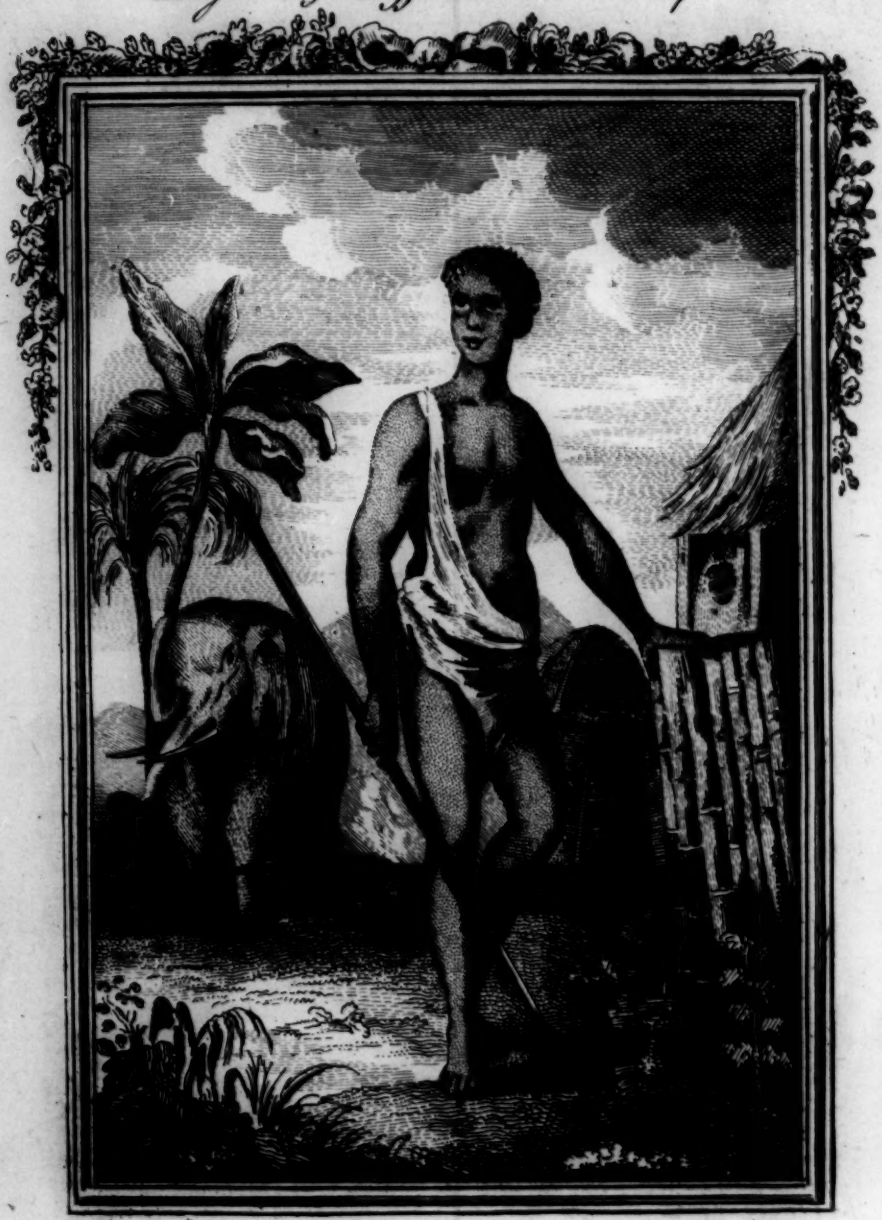
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The Arabians have likewiſe extended themſelves along the coaſt of Melind, of which the inhabitants are of the Mahommedan religion, and of a complexion only tawney. The people of Zanguebar, too, are not altogether black; they generally ſpeak Arabic; and their garments are made of cotton. This country, moreover, though in the torrid zone, is not exceſſively hot; and yet the hair of the natives is black and frizly like that of the Negroes. We even find on the whole of this coaſt, as well as at Moſambique, and Madagaſcar, ſome white men, who, it is pretended, are of Chineſe original, and ſettled there, in the time that the Chineſe navigated all the Eaſtern ſeas, in the ſame manner as they are now navigated by the Europeans. Whatever foundation there may be for this opinion, which appears to me highly dubious; it is certain, that the natives of this oriental coaſt of Africa are of black origin, and that the tawney or white men we find there, come from other countries. But, in order to form a juſt idea of the differences to be obſerved among theſe black nations, it is proper that we ſhould examine them more minutely.

In the firſt place, it is evident, from a compariſon of the deſcriptions given by travellers, that there is as much variety in the race of blacks as in that of whites; and that, like the latter, the former have their Tartars and their Circaſſians. Thoſe of Guinea are extremely ugly, and have an unſufferable ſtench; thoſe of Sofola, and of Moſambique, are handſome, and have no bad ſmell. It is neceſſary, then, to divide the blacks into different races; and theſe, in my opinion, may be reduced to two principal ones, that of the negroes, and that of the Caffres. In the firſt I comprehend the blacks of Nubia, of Senegal, of Cape Verd, of Gambia, of Serra-Liona, of the Gold Coaſt, of the coaſt of Juda, and of thoſe of Benin, Gabon, Lowango, Congo,


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The African.

Congo, Angola, and Benguela, till we come to Cape-Negre. In the ſecond I place the inhabitants beyond Cape-Negre till the point of Africa, where they aſſume the name of Hottentots; as alſo all the inhabitants of the eaſtern coaſt of Africa, ſuch as thoſe of the land of Natal, of Sofala, of Monopotapa, of Moſambique, and of Melind. The Blacks, moreover, of Madagaſcar, and the neighbouring iſlands, are not Negroes, but Caffres. Theſe two claſſes of black men rather reſemble each other in colour, than in the features of the viſage: in their hair, likewiſe, their ſkin, the ſmell of their body, their manners, and their diſpoſition, they diſcover a prodigious difference.

When we come to examine in particular the different nations, or tribes, of which each of theſe black races is compoſed, we ſhall perceive as many varieties as in the white races; and, at the ſame time, all the ſhades from brown to black, in the ſame manner as we have already remarked, in the white races, all the ſhades from brown to fair.

Let us begin, then, with the countries northward of Senegal, and, in proceeding over the coaſts of Africa, take a view of all the different tribes, which travellers have diſcovered, and of which they have given any deſcription. In the firſt place, it is certain, that the natives of the Canary-iſlands are not Negroes; ſince from authentic information it appears, that the people who anciently inhabited them were well-proportioned, and of a becoming height; that the women were handſome, and remarkable for the elegance of their hair; and, that of thoſe who occupied the ſouthern parts, the complexion was more of an olive-colour than that of the northern inhabitants. In the relation of his voyage to Lima, Duret remarks, that the ancient inhabitants of the iſland of Teneriff were a people vigorous, and of high ſtature, though meagre and tawney;

ney; and that of moſt of them, the noſe was flat. Unleſs it be the flat noſe, therefore, theſe people have nothing in common with the Negroes. The other inhabitants of the continent of Africa, in the ſame latitude with the above iſlands, are Moors, whoſe complexion is ſufficiently tawney, but who belong, as well as the iſlanders themſelves, to the race of whites.

The inhabitants of Cape-Blanc are alſo Moors, who follow the law of Mahomet, and who, without any ſettled habitation, wander about like the Arabians, in queſt of paſture for their cattle, whoſe milk ſerves them for food. They have horſes, camels, oxen, goats, ſheep; and the Negroes, with whom they carry on a traffic, give them eight or ten ſlaves for one horſe, and two or three ſlaves for one camel. It is from theſe Moors, that we derive gum-arabic; which they themſelves convert into nouriſhment by diſſolving in milk. It is rare that they eat any meat; and they hardly ever deſtroy their cattle, unleſs when they find them dying of ſickneſs, or of old age.

Theſe Moors reach to the river Senegal, which ſeparates them from the Negroes. Northward of this river are the Moors, who, as we have obſerved, are only tawney; and ſouthward of it are the Negroes, who are abſolutely black. The Moors have no particular reſidence, and lead an erratic life; the Negroes have ſettled habitations, and occupy villages; the former are free and independent, the latter have kings who hold them in ſlavery; the Moors are ſhort, meagre, of a diſagreeable aſpect, but ingenious and ſubtile; the Negroes are tall, bulky, well-made, but ſimple and ſtupid. The country inhabited by the Moors is, moreover, ſandy, and ſo ſterile, that in a very few places is there the ſmalleſt verdure to be ſeen; that inhabited by the Negroes, on the other hand, is rich, abounding in paſturage, in millet, and in trees always green, though indeed ſeldom bearing any fruit fit for the palate.

In

In ſome places, both to the north and ſouth of the river, we find a ſpecies of men, diſtinguiſhed by the appellation of *Foules*, who ſeem to form a ſhade between the Moors and the Negroes, and who, it is highly poſſible, are nothing more than Mulattoes produced by a coalition of the two nations. Theſe *Foules*, though leſs black than the Negroes, are, however, more brown than the Moors; they are alſo more civilized than the former; like the latter they follow the law of Mahomet; and to ſtrangers they behave with tolerable hoſpitality.

The iſlands of Cape-Verdare all in like manner peopled with Mulattoes, deſcended from the Portugueſe, who ſettled there, and from their original Negro-inhabitants. Theſe people are called *copper-coloured* Negroes, as indeed, though they rather reſemble the Negroes in their features, they are yet more of a yelloviſh than a black colour. Viewed in other reſpects we find them well-made, acute, but full of indolence. By hunting and fiſhing they in a manner wholly ſubſiſt; and to the chace of the antelope, or wild goat, they train up their dogs. As for their wives and daughters, them they freely reſign to the embraces of ſtrangers for the ſmalleſt conſideration. For pins alſo, and other things of equal value do they give very beautiful parrots, ſhells called *Porcelaines*, and even amber-gris, &c.

The firſt Negroes we meet with, then, are thoſe who live on the ſouth ſide of Senegal. Theſe people as well as thoſe who occupy the different territories between Senegal and Gambia, are called *Jaloſes*. They are all very black, well-proportioned, and of a ſize ſufficiently tall. The features of their viſage are leſs harſh than that of the other Negroes; and ſome of them there are, eſpecially among the female ſex, of whom the features are far from being irregular. With reſpect to beauty they have alſo the ſame ideas as ourſelves; of which as eſſential ingredients

ingredients they conſider fine eyes, a well-made noſe and mouth and lips of a proportional ſmallneſs. With reſpect to the ground of the picture alone, do they differ from us; for, with them, the colour muſt be exceedingly black and exceedingly gloſſy. Their ſkin, however, is highly delicate, and ſoft; and, colour alone excepted, we find among them women as handſome as in any other country of the world. They are uſually very gay, lively, and amorous. In their amours they are unconfined; but white men engage their fancy moſt. Theſe they exert every aſſiduity to pleaſe, whether in order to gratify their concupiſcence, or to obtain a preſent which may flatter their vanity. To their predilection for ſtrangers the huſbands make not the ſmalleſt oppoſition; nor do they ever betray any ſymptoms of jealouſy but when they carry on a commerce with men of their own nation. In the latter caſe, combats with the ſword or ſabre are frequent; whereas, with reſpect to ſtrangers, they not only make a free offer to them of their wives, their daughters, or their ſiſters, but even conſtrue it into a diſhonour, if that offer is rejected. Theſe women are never without a pipe in their mouth, and their ſkin, when they undergo any extraordinary heat, has a diſagreeable odour; an odour, however, by no means either ſo ſtrong, or ſo nauſeous as that of the other Negroes. They are highly fond of leaping and dancing to the ſound of a calebaſh, a drum, or a kettle; and all the movements of their dances are ſo many laſcivious poſtures, or indecent geſtures. They frequently bathe themſelves; and, in order to render their teeth even, their mode is to poliſh them with files. Previous to their marriage, the generality of the young women have different figures of animals, flowers, &c. cut out and embroidered upon their ſkin.

While at work, the Negro-women almoſt always carry their little infants upon their backs. To this

this cuſtom it is owing, according to ſome travellers, that of the Negroes the belly is commonly prominent, and the noſe flat: ſince the mother, from her neceſſarily giving a jerk, either when ſhe riſes or ſtoops, is apt to hit, with her back, the noſe of the child; who, in order to avoid the blow, naturally ſhrinks back, while he puſhes the belly forward. The hair of both ſexes is black and woolly. In hair and in complexion, therefore, conſiſts their principal difference from the reſt of mankind; and perhaps there ſubſiſts a ſtronger reſemblance between their features and the features of the Europeans in general, than between the viſage of a Tartar and the viſage of a Frenchman.

Father du Tertre, ſays expreſſly, that, if the Negroes are for the moſt part flat-noſed, it is becauſe the parents cruſh the noſes of their children; that, in like manner they compreſs their lips, in order to render them more thick; and, that of the few who have undergone neither of theſe operations, the features of the countenance are as comely, the noſe is as prominent, and the lips are as delicate, as thoſe of the Europeans. This remark, however, is only to be underſtood of the Negroes of Senegal, who of all others are the moſt beautiful and the moſt ſhapely; and it appears that, among the Negroes in general, thick lips, and a noſe broad and flat, are gifts from nature, by which was originally introduced, and at length eſtabliſhed, their cuſtom of flattening the noſe, and thickening the lips, of ſuch as, at their birth, diſcovered a deficiency in theſe ornaments.

The Negro-women are very fruitful: in childbirth they experience little difficulty; they require not the ſmalleſt aſſiſtance in it; nor of its effects do they feel the conſequence beyond the ſecond day. As nurſes, and as mothers, they deſerve great encomiums. They are at the ſame time more ingenious,

nious, and more alert than the men; and they even ſtudy to acquire the virtues of diſcretion, and of temperance. Father du Jaric ſays, that, in order to habituate themſelves to moderation in eating, and in ſpeaking, the *Jaloſe* Negro-women put water into their mouth in the morning, while employed in their domeſtic affairs; and that, till the hour allotted for their firſt meal arrives, they perſevere in not throwing it out again.

The Negroes of the iſland of Goree, and of the coaſt of Cape-Verd, are, like thoſe of Senegal, well-made, and very black. So highly do they prize their colour which is indeed as dark and as gloſſy as that of ebony, that the other Negroes who are leſs black they deſpiſe, in like manner as, in other countries, the white men deſpiſe the tawney. They are ſtrong and robuſt, but indolent and ſlothful. They have no corn, no wine, no fruit. Rarely do they taſte meat; and of fiſh and millet conſiſts their ſuſtenance. Though allowed little choice in the articles of proviſion, they yet reject herbs; and becauſe Europeans eat them, they compare them to horſes. Of ſpirituous liquors, however, they are fond to an exceſs: with theſe they often get intoxicated; and for theſe, if by no other means to be obtained, will they ſell their relations, their children, and even themſelves. They go almoſt naked; their whole cloathing conſiſting of nothing more than a bit of callico, which deſcends from the waiſt to the middle of the thigh, and which, they ſay, is all that, from the heat of their climate, they are allowed to wear. Notwithſtanding the wretchedneſs of their food, notwithſtanding the poverty in which they live, they are highly contented and chearful. They are alſo of opinion that their country is the richeſt, and the fineſt, in the world; that, becauſe they are the blackeſt of men, they are, of conſequence, the moſt beautiful; and indeed, were it not that their women

men diſcover a fondneſs for white men, on the very account of their colour, they would deem them unworthy of their notice.

Though the Negroes of Serra-Liona are rather leſs black than thoſe of Senegal, they are not, however, as Struys deſcribes them, of a colour, reddiſh and tawney. What might have miſled this traveller is, the cuſtom prevalent among the Negroes of Serra-Liona, as well as among thoſe of Guinea, of painting the body with red and other colours. Here the women are more debauched than at Senegal: there are prodigious numbers of them common; a circumſtance, from which they incur not the ſmalleſt cenſure or diſgrace. Both ſexes go with their heads uncovered; and their hair, which is very ſhort, they ſhave or cut off, in a number of different faſhions. In their ears they wear pendants, which weigh three or four ounces, and which conſiſt of the teeth or horns of beaſts, of ſhells, of bits of wood, &c. Some there are who have the upper lip, or the noſtrils pierced, for the purpoſe of having thoſe parts of the viſage ornamented in the like manner. They have no paſſion but for women, no ambition but that they may remain idle and inactive. They live in wretched huts, frequently ſituated on dreary wilds, while, if they choſe it, they might inhabit the moſt agreeable and the moſt delightful ſpots. The roads from one place to another are commonly twice as long as they need to be; and ſo far are they from attempting to curtail them, that even when told how in half the time they may reach any particular ſpot, they perſiſt in mechanically following the beaten path. They never meaſure time; nor of its value do they ſeem to poſſeſs the ſmalleſt idea.

Though the Negroes of Guinea are in general very healthy, yet they ſeldom attain what we term old age. In his own country, a Negro at the age of fifty is a very old man; and ſo early as at that of

forty

forty he diſcovers all the marks of being ſo. Of this contracted period of exiſtence, the cauſe we may with great probability impute to the premature intercourſe between the ſexes. The boys are ſo debauched, and ſo little reſtrained by their parents, that, in the tendereſt years of youth, Nature is not more ready to inſtill deſires, than they are to devote themſelves to an unbounded gratification of them; and, as for the girls, nothing in the whole country is ſo rare, as to find an individual of the ſex, who recollects the period at which ſhe ceaſed to be a virgin.

The inhabitants of the iſland of Saint-Thomas, of the iſland of Anabon, &c. are Negroes ſimilar to thoſe of the neighbouring continent. Diſperſed, however, by the Europeans, they are comparatively few in number, and ſubjected to the bondage of their invaders. Both ſexes, the covering of a kind of ſhort apron excepted, go naked. Mandelſlo ſays, that the Europeans who ſettle on the iſland of Saint-Thomas, which is not more than one degree and a half from the equator, retain their white colour till the third generation; and he ſeems to inſinuate that they afterwards become black. That this change ſhould be effected in ſo ſhort a time, ſeems to me, however, by no means probable.

The Negroes of the coaſts of Juda and Arada are leſs black than thoſe of Senegal and Guinea, and even than thoſe of Congo. So fond are they of the fleſh of dogs that they prefer it to all other viands. At their great feaſts, it ſeldom happens, that a roaſted dog is not preſented in the firſt courſe. To the Negroes, nevertheleſs, this predilection for the fleſh of dogs is far from being peculiar. We find it among the Savages of North-America, and among the Tartars. In the country of the latter, they even, in ſome places, caſtrate dogs, in order that they may become more fat, and more palatable

According

According to Pigafetta, and according to the author of Drake's voyage, who, as to the point before us, ſeems to have literally copied Pigafetta, the Negroes of Congo are black, though not all in the ſame degree with each other, and in a degree leſs than thoſe of Senegal. Of the generality the hair is black and frizly, though of ſome it is red. They are of moderate ſtature; their eyes are either of a brown, or of a ſea-green colour; their lips are not ſo thick as thoſe of the other Negroes; and the features of their viſage are not unlike thoſe of the Europeans.

In ſome of the provinces of Congo the cuſtoms are truly ſingular. When, for example, a perſon dies at Lowango, they place the body upon a kind of amphitheatre, of about ſix feet high, in the poſture of a man who is ſeated, with his hands reſting upon his knees; they deck it out with every thing which they deem ornamental in dreſs, and afterwards light up a fire before and behind it; and when at length the corpſe is thoroughly dried up and ſcorched, with much funeral ceremony they commit it to the earth. In the province of Malimba, the huſband is ennobled by the wife; and even when the ſovereign dies, and he only leaves behind him a daughter, to her, provided, however, ſhe is marrigeaable, devolves the royal authority in its full extent. Of this the firſt uſe ſhe makes to is, travel over her kingdom. On this occaſion, all her male ſubjects are obliged, previous to her arrival at each town and village, to form themſelves into a line for her reception; and he, whoſe aſpect happens to be moſt pleaſing to her majeſty, enjoys the envied honour of ſleeping with her for the night. When ſhe returns from her journey, the perſon, in whoſe embraces ſhe had been moſt happy, ſhe ſends for and marries; after which the whole regal authority devolves to the huſband. For theſe facts I am indebted to M. de la Broſſe, who has communicated to

me his written remarks on what he ſaw moſt worthy of notice, during his voyage to the coaſt of Angola, in 1738; and of the horrible vindictiveneſs of theſe Negroes he adds the following anecdote. "Every minute," ſays he, "do they ſend to our factories, demanding brandy for the king, or for ſome of the chief men of the place. Happening, one day, to refuſe it them, we had every reaſon to repent that we had not given it as uſual; for ſome time after, while ſeveral officers, both French and Engliſh, were amuſing themſelves together in fiſhing, ſeven or eight Negroes, the principal inhabitants of Lowango, came up to them in *palanquins*, and, in the cuſtomary mode of ſalutation, preſented to them their hands. Theſe, they had previouſly rubbed with an herb, of which the poiſon is to the laſt degree ſubtile, and its effect inſtantaneous, when unhappily the perſon to whom it is communicated, touches any thing, or takes tobacco, without firſt waſhing the hands; and ſo ſucceſsful were the Savages in their wicked project, that no leſs than eight perſons periſhed by it upon the ſpot."

As a cure for a pain of the head, or for any bodily pain whatever, they make a ſlight cut upon the part affected; and through a ſmall horn, with a narrow hole bored through it, they ſuck out the blood till they obtain relief.

The Negroes of Senegal, of Gambia, of Cape-Verd, of Angola, and of Congo, are of a more beautiful black then thoſe of Juda, of Iſſigni, of Arada, and of the circumjacent places. Though they are all exceedingly black when in health, their complexion, however, changes in ſickneſs; and then they become of a ſooty, or of a copper colour. "In our iſlands," ſays Father du Tertre, in his hiſtory of the Antillas, "the Negroes of Angola are preferred to thoſe of Cape-Verd, for bodily ſtrength; but, when heated, their ſtench is ſo ſtrong, that

that the air, whitherſoever they paſs, is infected with it for above a quarter of an hour. Of the Negroes of Cape-Verd the ſmell is leſs ſtrong: their ſkin likewiſe is more beautiful and more black; their body is of a better ſhape; the features of their viſage are leſs harſh; in ſtature they are more tall; and in diſpoſition they are more mild."

The Negroes of Guinea are well-qualified for the office of tillage, and for laborious employments in general; and though thoſe of Senegal are leſs vigorous, they yet are good domeſtic ſervants, and are more eaſily inſtructed in handicraft employments. Father Charlevoix ſays, that of all Negroes the Senegal ones are the moſt ſhapely, the moſt tractable, and, as domeſtics the moſt uſeful; that the Bambras are the talleſt, but that they are idle and knaviſh: that the Aradas are thoſe who underſtand beſt the culture of the earth; that the Nagoes are the moſt humane, and the Mondongos the moſt cruel; that the Mimes are the moſt reſolute, the moſt capricious, the moſt ſubject to deſpair; that the Creole-Negroes, from whatever nation they may derive their origin, inherit nothing from their parents but their ſpirit of ſervitude, and their colour; and that they are more ingenious, more rational, more adroit, though more idle, and more debauched, than thoſe who come from Africa. He adds, that of the Negroes of Guinea the underſtanding is exceedingly contracted; that numbers of them ſeem to be even entirely ſtupid, and can never be made to count more than three; that they have no memory, and are as ignorant of what is paſt, as of what is to come; that thoſe who enjoy a ſuperior degree of acuteneſs, ridicule the others with a tollerable grace; that they are, moreover, full of diſſimulation, and ſo tenacious of a ſecret, that they will periſh rather than divulge it; that in diſpoſition they are commonly very mild and humane; that

that they are tractable, ſimple, credulous, and even ſuperſtitious; that they are neither deſtitute of fidelity nor of courage, and might, with diſcipline and conduct, make a tolerable figure in the field.

If the Negroes are deficient in underſtanding, they ſeem, however, to be no wiſe deficient in ſentiment: they are chearful or melancholy, laborious or inactive, friendly or hoſtile, according to the manner in which they are treated. If properly fed, and unexpoſed to bad uſage, they are contented, joyous, obliging; and on their very countenance may we read the ſatisfaction of their ſoul. If hardly dealt with, on the other hand, their ſpirits forſake them, and they droop with ſorrow. Alike impreſſed with a ſenſe of what injuries, and of what favours, they have received, to a cruel maſter they are implacable foes, to an indulgent one, ſervants who will exert every effort of which human nature is capable, in order to expreſs to him their zeal, and their attachment. To their children, their friends, their country-men, they are naturally compaſſionate, and even tender: chearfully, of the little they have, do they communicate a ſhare to thoſe who are in neceſſity, or in indigence, though, otherwiſe than from that neceſſity, that indigence, they have not, perhaps, the ſmalleſt knowledge of them. That they have an excellent heart, therefore, is evident; and in having this, they have the ſeed of every virtue. Their ſufferings demand a tear. Are they not already ſufficiently unhappy in being reduced to a ſtate of ſlavery; in being obliged always to work without ever reaping the ſmalleſt fruits of their labour? To crown their wretchedneſs, muſt they be abuſed, buffeted, treated like brutes? Humanity revolts at the idea of a conduct, which nothing but the thirſt of gold could ever have introduced, and of which, from that thirſt, every day would ſtill, perhaps, produce an aggravated repetition, did not our laws pre-

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tribe limits to the brutality of the maſter, and to the miſery of his ſlave. A Negro is compelled to labour; and yet even of the coarſeſt food he is denied a reaſonable quantity. "Well," it is often ſaid, "do they ſupport hunger. The portion allotted to an European for one meal is to them a ſufficient ſubſiſtence for three days: however little a Negro eats, and however little he ſleeps, he is alike hardy, alike capable of fatigue." And is it poſſible that men, in whom the ſmalleſt ſentiment of humanity remains, can adopt ſuch maxims, can be prejudiced by them, and on ſuch ſhallow foundations juſtify to themſelves exceſſes, to which nothing could ever have given birth, but the moſt ſordid avarice? But let us throw aſide the gloomy picture, and return to our ſubject.

Of the nations who inhabit either the coaſts, or the interior territories of Africa, from Cape-Negre to Cape des Voltes, which together are in extent about four hundred leagues, we know little unleſs that they are far from being ſo black as the other Negroes, and that they have a conſiderable reſemblance to their northern neighbours the Hottentots. Theſe, on the other hand, are a people well-known; and few are the travellers who have omitted to ſpeak of them. They are not of the claſs of Negroes, but of that of Caffres; and their ſkin would be only of a tawney hue, did they not themſelves render it black.

Mr. Kolbe, though he has given ſo minute a deſcription of the Hottentots, is ſtrongly of opinion, however, that they are Negroes. Like that of the latter, he aſſures us, their hair is ſhort, black, frizled, and woolly; nor in a ſingle inſtance did he ever obſerve it long. But from information this alone we do not ſeem authoriſed to conſider them as real Negroes. Mr. Kolbe himſelf ſays, that their colour is olive, and never black, though they take the utmoſt pains to render it ſo; and therefore, in this reſpect,

reſpect, the difference between them is abſolute and eſſential. Again, there can, in my opinion, be little certainty derived from the appearance of their hair; as they never either comb or waſh it; as they rub it every day with a compoſition of greaſe and ſoot in large quantities; and as, being perpetually clogged with duſt, and with filth, it at length becomes, as it were, incorporated, and much, in appearance, like the fleece of a black ſheep loaded with dung. Beſides, they are in diſpoſition different from the Negroes. The latter are cleanly, ſedentary, and eaſily ſubjected to ſlavery; the former, on the other hand, are frightfully-filthy, are unſettled, independent, and highly jealous of their liberty. Theſe contrarieties are evidently more than ſufficient to confirm us in the belief, that the Hottentots are of a race diſtinct from that of the Negroes whom we have already deſcribed.

Gama, who firſt doubled the Cape, and pointed out a paſſage to the Indies for European nations, on his arrival in the bay of Saint-Helena, on the fourth of November, 1497, found the inhabitants very black, ſhort in ſtature, and ugly in aſpect. He does not ſay, however, that they were naturally as black as the Negroes; and doubtleſs they would not have appeared to him of ſo deep a black as he deſcribes, had it not been for the greaſe, and the ſoot, with which they endeavour to render themſelves ſo. The ſame traveller remarks, that in the articulation of their voice there was ſomething ſimilar to a ſigh; that their weapons conſiſted of ſticks, hardened in the fire, and furniſhed at the points with the horn of ſome animal. To the arts in uſe among the Negroes, the Hottentots, it is plain, therefore, are utter ſtrangers.

The Dutch travellers ſay, that the Savages northward of the Cape are of a ſmaller ſize than the Europeans; that their complexion is of a reddiſh brown,

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and, in ſome, has a greater proportion of red than in others; that they are very ugly, and take great pains to render the body and the viſage black; that their hair is like that of a perſon who has not long before been hung in chains. They add, that the Hottentots are of the colour of the Mulatoes; that their viſage is unſhapely; that they are meagre, of a moderate height, and very nimble; that their language is uncouth; and that they cluck ſo many India cocks. Father Tanchard ſays, that, though they have commonly hair as cottony as the Negroes, there are numbers, however, who have it more long, and who allow it to float over their ſhoulders. He even aſſerts, that ſome of them there are as white as the Europeans, but that they begrime the viſage, and the whole body, with a mixture of greaſe and the powder of a certain black ſtone; and that, though the women are naturally very white, they yet are obliged to blacken themſelves like their huſbands, in order to pleaſe them. Ovington ſays, that the Hottentots are more tawney than the other Indians; that there are no people, who bear ſo ſtrong a reſemblance to the Negroes, as to colour and features; that, however, they are leſs black, their hair is not ſo frizly, nor is their noſe ſo flat.

From all theſe teſtimonies it is evident, that the Hottentots are not real Negroes, but a people, who, of the black race, have the ſame kind of affinity to the whites, that the Moors, of the white race, have to the black. Theſe Hottentots, moreover, form a ſpecies of very extraordinary Savages. The women, who are much ſmaller than the men, have a kind of excreſcence, or hard ſkin, which grows over the os pubis, and which deſcends to the middle of the thighs in the form of an apron. Thevenot ſays the ſame thing of the Egyptian women, but inſtead of allowing this ſkin to grow, they burn it off, he adds, with hot irons. I doubt whether the remark

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is as true with reſpect to the Egyptian, as to the Hottentot-women; but certain it is, that all the female natives of the Cape are ſubject to this monſtrous deformity, and that they do not ſcruple to expoſe it to ſuch perſons as have the curioſity, or the intrepidity, to deſire to ſee or touch it. As for the men, though not by nature, they are all demi-eunuchs; being at the age of eight, though often more late, deprived of a teſticle. Mr. Kolbe was an eye-witneſs of this operation being performed upon a young Hottentot of eighteen; and the circumſtances with which the ceremony is accompanied are ſo ſingular, that I cannot refrain from giving an account of them.

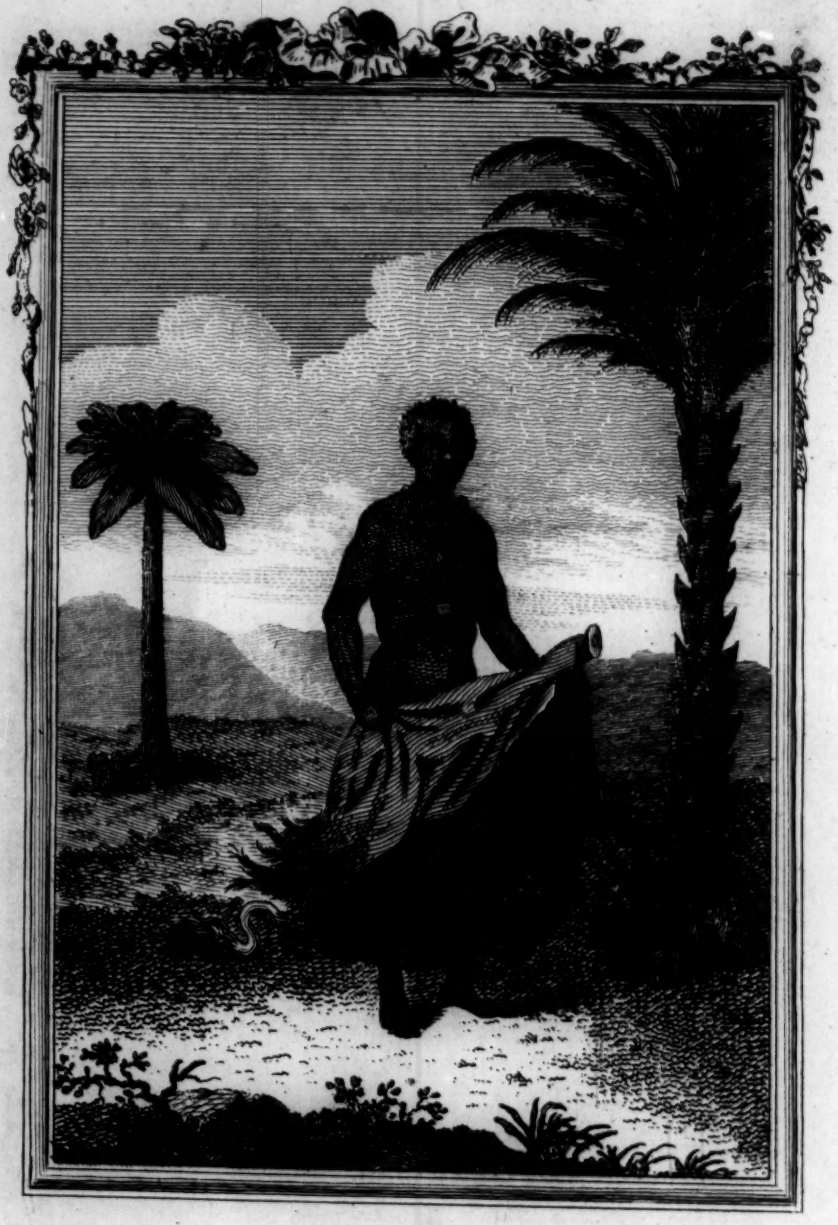
After having thoroughly rubbed the young man with the fat of the entrails of a ſheep, which had been killed on purpoſe, they ſtretched him upon his back, and tied his hands and his feet, while three or four of his friends held him. Theſe preliminary points adjuſted, the prieſt (for it is a religious ceremony) made an inciſion with a very ſharp knife, took out the left teſticle,* and in its place depoſited a ball of fat of the ſame ſize, which had been prepared with certain medicinal herbs. After ſewing up the wound, they untied the patient; but the prieſt, before he left him, rubbed his whole body with the hot fat of the ſheep, or rather ſo plentifully moiſtened it therewith, that, when the fat cooled, it formed a kind of cruſt. This friction was ſo violent, that the young man, whoſe previous ſufferings had been ſufficiently great, was now covered with large drops of ſweat, and began to ſmoke like a roaſted capon. On this cruſt of tallow the operator then made furrows with his nails from one extremity to the other; and after making water upon them as plentifully as he could, he renewed his frictions as

* Tavernier, in ſpeaking of this ſtrange cuſtom, ſays, that it is the *right* teſticle which they cut off.

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THE HOTTENTOT.

before, and filled up with fat the furrows he had thus ſurcharged with his urine. The inſtant the ceremony is concluded, they always leave the patient; and though, in general, he rather diſcovers the ſymptoms of death than of life, he is yet obliged to crawl, in the beſt manner he can, to a little hut, built for him on purpoſe, near the ſpot where the operation is performed. There, without the aſſiſtance of a ſingle individual, without even any refreſhment, or nouriſhment, but the fat which has been laid upon his ſkin, and which he may lick if he pleaſes, he remains two days; at the expiration of which, he is generally cured. Not till then is he allowed to appear abroad; and, as a proof that his recovery is complete, he muſt run, and ſhew himſelf as nimble as a ſtag.

Though of all the Hottentots the noſe is very flat, and very broad, yet it would not be of that form, did not their mothers, conſidering a prominent noſe as a deformity, think it a duty incumbent upon them to cruſh it preſently after their birth. Their lips are alſo thick, and their upper lip is eſpecially ſo; their teeth are very white; their eye-brows are thick; their head is large; their body is meagre; their limbs are ſlender. They ſeldom live longer than forty years; and of this ſhort duration of life the cauſes, doubtleſs, are, their being ſo fond of filth, and reſiding continually in the midſt of it, as alſo their living upon meat that is tainted or corrupted, of which indeed their nouriſhment chiefly conſiſts. I might dwell longer upon the deſcription of this naſty people, but as moſt travellers have already given very large accounts of them, to their writings I refer. One fact, however, related by Tavernier, I ought not to paſs in ſilence. The Dutch, he ſays, once took a Hottentot girl, ſoon after her birth, and after bringing her up among themſelves, ſhe became as white as an European.

From this circumſtance he preſumes, that all the Hottentots would be of a tolerable whiteneſs, were it not for their cuſtom of perpetually begriming themſelves.

In proceeding along the coaſt of Africa, on the other ſide of the Cape of Good Hope, we find the land of Natal, and a people different from the Hottentots; than whom they are leſs filthy, leſs ugly, and naturally more black. Their viſage is of an oval form, their noſe is well-proportioned, their teeth are white, their aſpect is agreeable, and their hair is by nature frizly. They ſhew themſelves rather fond indeed of greaſe, by wearing caps made of beef-ſuet. Theſe caps are from eight to ten inches in height, and they take no ſhort time to make them: for they require that the ſuet ſhould be well refined, they apply it by little and little, and they ſo thoroughly intermix it with the hair that it never falls off. Kolbe pretends, that from their birth, and without any precaution to render it ſo, the noſe is flat; that they alſo differ from the Hottentots in not ſtuttering; that, like them, they do not ſtrike the palate with the tongue; that they have houſes; that they cultivate the ground, and produce from it a kind of maiz, or Turkiſh corn, of which they make beer, a drink unknown to the Hottentots.

After the land of Natal, we find thoſe of Sofola and Monomotapa. The people of the former, according to Pigafetta, are black, but more tall and more luſty than the other Caffres. It is in the environs of the kingdom of Sofola that this author places the Amazons; but nothing is more uncertain than what has been propagated with reſpect to theſe warlike women.

The inhabitants of Monomotapa, as the Dutch travellers inform us, are in ſize tolerably tall, and well-proportioned, black, and of a good com-

plexion. The young girls, a bit of callico which they wear excepted, go naked; but ſo ſoon as they are married, they are allowed garments. This people, notwithſtanding their blackneſs, are different from the Negroes: their features are neither ſo harſh nor ſo ugly; their body has no bad ſmell; and they are incapable of ſervitude or of labour. Father Charlevoix ſays, that ſome blacks from Monomotapa, and from Madagaſcar, have been ſeen in America; that they could not be made to act in a ſervile capacity; and that they even died there in a very ſhort time.

The inhabitants of Madagaſcar, and of Moſambique, are black, though ſome more ſo than others. Of thoſe of Madagaſcar the hair on the crown of the head is leſs frizly than we find it among thoſe of Moſambique. Neither of them are real Negroes; and though thoſe of the coaſt are enſlaved by the Portugueſe, yet thoſe of the internal part of the continent are ſavage, and jealous of their liberty. They all go abſolutely naked; they feed on the fleſh of the elephant; and they carry on a traffic of ivory.

In Madagaſcar, there are different ſpecies of men. Some there are of the white ſpecies, and, though very tawney, yet ſeemingly of a race diſtinct from that of the black men. Of theſe the hair is black and frizly; of thoſe it is leſs black, leſs frizly, and more long. The common opinion of travellers is, that the white men derive their origin from the Chineſe. But, as Francis Cauche with great juſtice remarks, there is a greater probability that they are of European race; as, in the whole number of thoſe he ſaw, there was not one who had either the flat noſe, or the flat viſage of the Chineſe. He likewiſe ſays, that the colour of the white men is lighter than that of the Caſtilians; that their hair is very long; that, with reſpect to the black men, they are not

flat-nosed like those of the continent; and, that their lips are tolerably delicate. There are also in this island a number of men of a colour altogether olive or tawney, who are evidently produced by the intermixture of the blacks and whites. The same traveller observes, that the natives of the bay of Saint-Augustin are tawney; that they have no beard; that their hair is long and straight; that in size they are tall and well-proportioned; and that, though they are all circumcised, it is yet highly probable, they never heard of the law of Mahomet, as they have no temples, no mosques, and are strangers to religion.

The French, who were the first who landed and settled upon the above island, found the white men we speak of; and they remarked, that to these white men the blacks, whom we must consider as the natives of the country, paid great respect. Madagascar is exceedingly populous, and rich in pasturage, and in cattle. They are highly debauched; nor is it a dishonour to a woman that she publickly prostitutes herself. They are also prodigiously fond of singing, of dancing, and of pastimes in general; and though they are naturally very lazy, they are not, however, without some knowledge of the mechanical arts. They have plough-men, carpenters, potters, black-smiths, and even gold-smiths; yet their houses are without accommodation, and without furniture. They sleep upon mats; they eat flesh almost raw, and devour in the same manner even the hides of their oxen; mixed with honey, they also eat wax. The common people go almost entirely naked; but as for the richer classes, they wear drawers, or short petticoats, of cotton, and of silk.

With the different tribes who inhabit the interior parts of Africa, we are not sufficiently acquainted to give a just description of them. Those whom the Arabians distinguish by the name of *Zingues*, are an

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almoſt-ſavage race of black men. Marmol ſays, that they multiply prodigiouſly, and that they would over-run all the neighbouring countries, were it not for certain hot winds, which, from time to time, occaſion a great mortality among them.

From every thing which has been here related, it appears, that the Negroes, properly ſpeaking, are different from the Caffres, who are blacks of a diſtinct ſpecies. From the deſcriptions given it alſo ſtill more evidently appears, that the colour depends principally upon the climate, and that the features depend greatly on the cuſtoms prevalent among different nations of bruiſing the noſe, of drawing back the eye-lids, of lengthening the ears, of thickening the lips, of flattening the viſage, &c. No ſtronger proof can be adduced of the very great influence of the climate upon the colour, than the circumſtance of finding under the ſame line, and at the diſtance of above a thouſand leagues, two nations ſo greatly reſembling each other as thoſe of Senegal and Nubia; and of obſerving, that, though the Hottentots muſt have neceſſarily derived their origin from black nations, they yet are more white than all the other Africans, in proportion as the climate in which they live is more cold. Should it be thought aſtoniſhing, that, on one ſide of the banks of Senegal, we meet with a people tawney, and on the other, with a people entirely black, it is only neceſſary to recollect what has been already intimated with reſpect to the effects of food, which muſt operate upon the colour, in the ſame manner as upon the temperament of the body in general. It is an acknowledged truth, for example, that of the hares which live on plains and marſhy places, the fleſh is much more white than of thoſe which, though in the ſame neighbourhood, live on mountains and dry grounds. The colour of the fleſh proceeds from that of the blood, and of the other humours of the body, of

which

which the quality is neceſſarily influenced by the nouriſhment.

In all ages has the origin of black men formed a grand controverſy. The Ancients, who hardly knew any but thoſe of Nubia, conſidered them as forming the laſt ſhade of the tawney people; and they confounded them with the Ethopians, and the other nations of that part of Africa, who, though extremely brown, have, however, more affinity to the white than to the black race. They concluded, therefore, that the difference of colour in men aroſe ſolely from the difference of climate; and that what produced the blackneſs of theſe people was, their being perpetually expoſed to the violent heat of the ſun. To this opinion, which ſeems to have truth for its baſis, great objections aroſe, when it was known, that, on the other ſide of Nubia, in a climate ſtill more ſouthern, and even under the Equator itſelf, as at Melind, and at Mombaze, the generality of the inhabitants are not black like the Nubians, but only very tawney; and when it was obſerved, that, by tranſporting black men from their burning climate into more temperate regions, they loſt nothing of their colour, and communicated it, as before, to their deſcendents. But if, on the one hand, we reflect on the migrations of different nations, and on the other, on the time which is perhaps neceſſary, in order to render a race either black or white, we ſhall find no inconſiſtency in the notion of the ancients; the real natives of that part of Africa being the Nubians, who were originally black, are black ſtill, and will perpetually remain black, while they inhabit the ſame climate, and while they do not mix with the whites. The Ethiopians, on the contrary, the Abyſſinians, and even the people of Melind, derive their origin from the whites; as their religion, and their cuſtoms are the ſame with thoſe of the Arabians, and as they

reſemble

reſemble them in colour. They are indeed more tawney than the ſouthern Arabians; but this even proves, that, in one and the ſame race of men, the greater or leſs degree of black depends on the greater or leſs degree of heat. Many centuries, and a ſucceſſion of a great number of generations might perhaps elapſe before a white race would aſſume by degrees a brown colour, and become at length altogether black; but there is a probability that, in time, a white people by being tranſported from the North to the Equator would become brown, and even completely black, eſpecially if this people were to change their manners, and to feed ſolely on the productions of the warm climate into which they might have been tranſported.

Of little weight do I conceive the objection which may be made to this opinion, from the difference of the features; for it may be replied, that, between the features of a Negro, which have not been diſfigured in his infancy, and the features of an European, there is leſs difference, than between thoſe of a Tartar and a Chineſe, or of a Circaſſian and a Greek. As for the hair, its nature depends ſo greatly on that of the ſkin, that we cannot conſider the difference which it produces but as highly accidental; ſince we find in the ſame country, and in the ſame town, men who, though white, have hair nevertheleſs entirely different from one another. Even in France, for inſtance, we meet with men, whoſe hair is as ſhort, and as frizly as that of the Negroes. Beſides, ſo powerful is the influence of climate upon the colour of the hair, both of men and of animals, that, in the kingdoms of the North, there is no black hair belonging to the human ſpecies; and that hares, ſquirrels, weaſels, and many other animals, which, in countries leſs cold, are brown or grey, are there white or nearly white. The difference thus produced

produced by the influence of cold, or of heat,, is ſo conſpicuous, that, in moſt nothern countries, as in Sweden, for example, hares, and certain other animals, are quite grey during the ſummer, and quite white during the winter.

But againſt the opinion in queſtion there is another argument, which is more powerful, and, from the firſt view of it, indeed inſuperable; namely, that there has been diſcovered an entire continent, a new world, of which moſt of the inhabited territories are ſituated in the torrid Zone, and in which, nevertheleſs, there is not one black man to be ſeen; the natives of this part of the earth, being more or leſs red, more or leſs tawney, or copper-coloured. In the Antilla-iſlands, in Mexico, in the kingdom of Santa-Fe, in Guiana, in the country of the Amazons, and in Peru, we might have expected to find Negroes, or at leaſt black men, as thoſe countries of America are ſituated in the ſame latitude with Senegal, Guinea, and the country of Angola, in Africa; and in Brazil, in Paraguay, in Chili, did the colour of men depend upon the climate, or the diſtance from the pole, we might, in like manner, have expected to ſee men ſimilar to the Caffres, to the Hottentots. But before we enter into a diſcuſſion of this ſubject, it is neceſſary that we ſhould examine the different tribes of America, in the ſame manner as we have already examined thoſe of the other parts of the world; and thus we ſhall be more enabled to form juſt compariſons, and from thoſe compariſons, to draw general concluſions.

In beginning our inquiries, then, we find in the moſt northern parts of America, as in a preceding page has been ſuggeſted, ſpecies of Laplanders, ſimilar to thoſe of Europe, or to the Samoeids of Aſia; and though, in compariſon of the latter, they are few in number, yet they are diffuſed over a very conſiderable extent of ground. Thoſe who inhabit the

the lands of Davis's Strait are of a diminutive ſize, of an olive complexion, and their legs are ſhort and thick. They are ſkilful fiſhers; they eat their fiſh and their meat raw; their drink conſiſts of pure water, or of the blood of the dog-fiſh; they are, moreover, very ſtrong, and generally live to a great age. Here, we ſee, are the figure, the colour, and the manners of the Laplanders; and, what is truly ſingular is, that, as among the Laplanders of Europe, we meet with the Finlanders, who are white, comely, tolerably tall, and tolerably well-made; ſo, in like manner, among the Laplanders of America, we meet with another ſpecies of men, tall, well-made, tolerably white, and with features exceedingly regular.

Of a different race from the former ſeem to be the ſavages of Hudſon's Bay, and northward of the land of Labrador. They are ugly, however, diminutive, and unſhapely; their viſage is almoſt entirely covered with hair, like the ſavages of the country of Yeco northward of Japan; in ſummer, they dwell under tents made of ſkins of the rein-deer; in winter, they live under ground, like the Laplanders and the Samoeids, and, like them, ſleep together promiſcuouſly, and without the ſmalleſt diſtinction. They likewiſe live to a great age, though they feed on nothing but raw meat and fiſh. The ſavages of Newfoundland have a conſiderable reſemblance to thoſe of Davis's Strait: they are low in ſtature; they have little or no beard; their viſage is broad and flat; their eyes are large; they are generally rather flat-noſed; and, upon the whole, are far from being unlike the ſavages of the north continent, and of the environs of Greenland.

Beſides theſe ſavages, who are ſcattered over the moſt northern parts of America, we find others more numerous, and altogether different, in Canada, and in the vaſt extent of land to the Aſſiniboils. Theſe are all tolerably tall, robuſt, vigorous, and well-made;

made; they have hair and eyes black, teeth very white, a complexion tawney, beard ſcanty, and over the whole of their body hardly a veſtige of hair; they are hardy, indefatigable walkers, and very nimble runners. They are alike unaffected by exceſſes of hunger, and of repletion; they are by nature bold and fierce, grave and ſedate. So ſtrongly, indeed, do they reſemble the oriental Tartars in the colour of the ſkin, the hair, and the eyes, in the ſcantineſs of beard, and of hair, as alſo in diſpoſition, and in manners, that, were they not ſeparated from each other by an immenſe ſea, we ſhould conclude them to be deſcended from that nation. In point of latitude, their ſituation is alſo the ſame; and this ſtill farther proves how powerfully the climate influences not only the colour, but the figure of men.

In a word, in the new continent, as in the old, we find, at firſt, in the northern parts, men ſimilar to the Laplanders, and likewiſe men of a white ſkin, and of fair hair, like the inhabitants of the north of Europe; afterwards we find men hairy like the ſavages of Yeco; and laſtly, we find the ſavages of Canada, and of the whole continent to the Gulph of Mexico, who reſemble the Tartars in ſo many reſpects, that we could not entertain a doubt of their being real Tartars, were we not embarraſſed about the poſſibility of their migration thither. Yet, if we reflect on the ſmall number of men, found upon this immenſe extent of ground, and on their being entirely unciviliſed at the period of their diſcovery, we ſhall be inclined to believe that all theſe ſavage nations were new colonies produced by a few individuals from ſome other country. It is maintained, indeed, that, examined from the north to the Lucaye-iſlands, and to the Miſſiſſippi, North America does not contain the twentieth part of the native inhabitants which it did, when originally diſcovered; and that they have all been deſtroyed, or ſo reduced

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in number, that we ought not altogether to judge of them now, as we would have done at that time. But, even allowing that North America had then twenty times more inhabitants than it has now, we ſtill are authoriſed to conſider it, even at the æra of its diſcovery, as a land either deſerted, or ſo recently peopled, that its inhabitants had not yet had time to multiply.

Mr. Fabry, who travelled a prodigious way to the north-weſt of the Miſſiſſippi, and viſited places which no European had viſited before him, and of which conſequently the ſavage inhabitants had not been deſtroyed, has aſſured me, that that part of America is ſo deſerted, that he often travelled an hundred and two hundred leagues, without obſerving a ſingle human face, or the ſmalleſt veſtige of a habitation; that, whenever he did meet with any habitations, they were always at immenſe diſtances from one another; that in each of them there was frequently no more than one family, ſometimes there were two or three families, but never above twenty perſons together; and that, between theſe twenty perſons and twenty others there was generally a ſpace of a hundred leagues at leaſt.

Along the lakes, and the rivers, it is true, nations of ſavages have been found, much more populous, of which there remain ſome, ſufficiently numerous to moleſt occaſionally the inhabitants of our colonies. The moſt conſiderable of theſe, nevertheleſs, do not exceed three or four thouſand perſons, and theſe diſperſed over a ſpace of ground frequently more extenſive than the whole kingdom of France. I am perſuaded, then, that, without any danger of fallacy, it might be aſſerted, that there are more men in the city of Paris alone, than there are ſavages in all that part of North America, which is compriſed between the ſea northward and ſouthward, or from the gulph of Mexico to the fartheſt

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extremity north; an extent of ground far more large than the whole of Europe.

The multiplication of the human ſpecies depends more on ſociety than on nature; and men could not have been ſo numerous, in compariſon of the wild beaſts, had they not aſſociated together, and given aid, defence, and ſuccour to each other. In the part of America, of which we now ſpeak, the *biſon** is perhaps more frequently to be ſeen than a man. But, on the ſame principle that the number of men cannot receive any conſiderable encreaſe but by their union in ſociety, that number, when once augmented to a certain pitch, neceſſarily, as it were, produces ſociety. It is to be preſumed, therefore, that, as no civilized nation was found in this part of America, the number of inhabitants was ſtill too ſmall, and their eſtabliſhment too recent, for them to feel the neceſſity, or even the advantage, of aſſociating together; for, though each of theſe nations might have a ſpecies of manners, or of cuſtoms peculiar to itſelf, and though the inhabitants of one might be more or leſs fierce, more or leſs cruel, more or leſs courageous, than the inhabitants of another; they yet were all equally ſtupid, equally ignorant, equally unacquainted with the arts, and deſtitute of induſtry.

To dwell long on the cuſtoms of ſuch ſavage nations would, in my opinion, be unneceſſary. It has not been always attended to by authors, that what they have given us for eſtabliſhed advantages, and for the manners of a community, were nothing more than actions peculiar to a few individuals, and often determined by circumſtances, or by caprice. Some nations, they tell us, eat their enemies, ſome burn them, and ſome mutilate them; one nation is perpetually at war, and of another the grand object

* A kind of wild bull, different from the European bull.

is,

is, to live in peace; in one country, the child kills his parent, when he has lived to a certain age, and in another, the parent eats his child. All theſe ſtories, on which travellers have, with ſo much complacency, enlarged, mean nothing more than that one ſavage had devoured his enemy, another had burned or mutilated him, and a third had killed or eaten his child. All theſe things may be known to happen in one, as well as in ſeveral ſavage nations; for every nation, in which there is no government, no law, no maſter, no habitual ſociety, ought rather to be termed a tumultuous aſſemblage of men barbarous and independent; men who obey nothing but their own private paſſions, and who, incapable of having a common intereſt, are alſo incapable of purſuing one object, and of ſubmitting to fixed and ſettled uſages; theſe ſuppoſing a ſeries of deſigns, founded on reaſon, and approved of by the majority.

The ſame nation, it may be replied, is compoſed of men who are no ſtrangers to each other, who ſpeak the ſame language, who unite, when neceſſity calls, under a chief, who arm themſelves in the ſame faſhion, howl in the ſame faſhion, and daub themſelves of the ſame colour. With truth might the remark be made, if theſe uſuages were eſtabliſhed; if ſavages did not often aſſemble they know not how, and diſperſe they know not why; if their chief did not ceaſe to be ſo, whenever it ſuited his caprice, or their own; and if their language itſelf was not ſo ſimple as to be, with little variation, the language of every ſavage.

As they have but few ideas, ſo alſo have they but few expreſſions; and theſe can only turn upon things the moſt general, and objects the moſt common. Though even the majority of their expreſſions were different, yet as they are reduced to a very ſmall number of terms, they cannot fail, in a litte time, to underſtand one another; and with more

more eaſe may a ſavage both underſtand and ſpeak the languages of all the other ſavages, than the inhabitants of a poliſhed nation may obtain a bare comprehenſion of the languages of any other nation equally poliſhed.

Not more is it uſeleſs therefore, diffuſely to enlarge on the cuſtoms, and the manners, of theſe pretended nations, than it might be neceſſary to examine the nature of the individual. Of all animals, in truth, the ſavage man is the moſt ſingular, the leaſt known, and the moſt difficult to deſcribe; but ſo little do we diſtinguiſh what nature alone has given us, from what has been ſuper-added by education and by art, by imitation and by example, or ſo thoroughly do we confound them, that it would not be ſurprizing to find we had totally miſtaken the picture of a ſavage, were it preſented to us in its real colours, and with the natural features alone by which it ought to be characterized.

An abſolute ſavage, ſuch as the boy educated among bears, as mentioned by Conor, the young-man in the foreſts of Hanover, or the little girl in the woods in France, would be a ſpectacle full of curioſity to a philoſopher: in obſerving his ſavage he might be able preciſely to aſcertain the force of the appetites of nature; he might ſee the ſoul undiſguiſed, and diſtinguiſh all its natural movements. And who knows whether he might not diſcover in it more mildneſs, more ſerenity and peace than in his own; whether he might not perceive, that virtue belongs more to the ſavage than to the civilized man, and that vice owes its birth to ſociety.

But let us return to our principal object. If in the whole of North-America, there were none but Savages to be met with, in Mexico, and in Peru, however, there were found nations poliſhed, ſubjected to laws, governed by Kings, induſtrious, acquainted with the arts, and not deſtitute of religion.

They

They lived in towns of which the civil government was ſuperintended by the ſovereign. Theſe nations, which were, moreover, tolerably populous, cannot be conſidered as new colonies ſprung from a few individuals, who had wandered thither from Europe, or from Aſia, from which their ſituation was ſo remote. Beſides, though the Savages of North-America reſemble the Tartars, by their being ſituated in the ſame latitude, yet the latter, who live, like the Negroes, under the torrid zone, have not the ſmalleſt reſemblance to Negroes. Whence, then, ſhall we trace the origin of theſe nations; and whence, at the ſame time proceeds in reality the cauſe of the difference of colour in men, ſince that of the influence of climate is, in the preſent inſtance, entirely overthrown?

To theſe queſtions before I give every ſatisfactory anſwer which lies in my power, let us purſue our enquiries, and give a deſcription of thoſe men who appear in effect ſo different from what they ought to be, were the diſtance from the pole the principal cauſe of the variety we meet with in the human ſpecies. The Savages of the North, and the Savages of Canada, we have already deſcribed. Thoſe of Florida, of the Miſſiſſippi, and of the other ſouthern parts of the North-American continent, are more tawney than thoſe of Canada. We cannot, however, pronounce them brown; the oil, and the colours, with which they rub the body, giving them more of an olive hue than naturally belongs to them. Coreal ſays, that the women of Florida are tall, ſtrong, and of an olive complexion, like the men; that they paint the arms, the legs, and the body, of ſeveral colours, which, as they are imprinted into the fleſh by means of a number of little inciſions, are indelible; and that the olive colour of both ſexes proceeds not ſo much from the heat of the ſun, as from certain oils with which they form a kind of varniſh

varniſh upon the ſkin. He adds, that the women are remarkably active; that they ſwim over great rivers, even with a child in their arms; and that they climb up the loftieſt trees with an agility not leſs ſurpriſing. In all of theſe particulars they entirely reſemble the ſavage women of Canada, and of the other countries of America.

Speaking of the Apalachites, a people in the vicinage of Florida, the author of the "Hiſtoire naturelle et morale des Antilles" ſays, that they are men of large ſtature, of an olive colour, and well-proportioned; that their hair is black and long; that the Caribbs, or Savages of the Antilla-iſlands, are ſprung from theſe Savages of Florida; and, that they even know, by tradition, the period of their migration.

The natives of the Lucaye-iſlands are leſs tawney than thoſe of Saint-Domingo, and of the iſland of Cuba; but at preſent there remain ſo few of either, that we can hardly verify what the firſt traveller to toſe places mention of the inhabitants. They have pretended, that they were very numerous, and governed by chiefs whom they called *Caciques*; that they had likewiſe prieſts, and phyſicians or rather conjurors. But theſe are facts rather apocryphal, and, at any rate, of little conſequence to our hiſtory. The Caribbs in general, according to Father du Tertre, are men of a fine ſize, and of a good aſpect; they are potent, vigorous, and robuſt, very active, and very healthy. Numbers of them have a flat forehead and noſe; but this form of the viſage is entirely the work of the parents, who flatten the head in this manner, ſoon after the birth of the child. In all ſavage nations, this kind of caprice is very frequent among the inhabitants of altering the natural figure of the countenance. Of almoſt all the Caribbs the eyes are black, and though rather little, the diſpoſition of the forehead, and

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viſage makes them appear ſufficiently large. Their teeth are beautiful, white, and regular; their hair is long, and ſmooth, and, without a ſingle exception to the contrary, fair. Their ſkin is tawney, or olive-coloured; and even the whites of their eyes are rather of this hue. That their colour is thus dark is owing to Nature, and not, as ſome authors have aſſerted to the *rocou* with which they rub themſelves; ſince it has been remarked, that ſeveral of the children of theſe Savages who were educated among the Europeans, and who never rubbed themſelves in this manner retained the ſame tawney and olive complexion as their parents. The whole of this ſavage tribe have a penſive air, even when their thoughts are perhaps leaſt employed; their countenance is gloomy; and they appear oppreſſed with melancholy. Though naturally mild and compaſſionate, they are yet exceedingly cruel to their enemies. They eſteem it indifferent whom they marry, their relations, or ſtrangers. Their firſt couſins belong to them by right; and many have been known to have at one time, two ſiſters, or a mother and her daughter, and even their own child. Thoſe who have many wives viſit them in turn, and ſtay with each a month, or at leaſt a certain number of ſtated days; and by adhering to this conduct they preclude all jealouſy. They readily forgive their wives for the commiſſion of adultery, but are implacable enemies to the man who debauch them. They feed on lizards, on ſerpents, on crabs, on tortoiſes, &c. which they ſeaſon with pimento, and with the flower of *manioc*. Lazy to an exceſs, and accuſtomed to the greateſt independence, they deteſt ſlavery, and can never be rendered ſo uſeful as the Negroes. For the recovery of their liberty they are capable of every exertion; and when of this they ſee an impoſſibility, rather will they die of hunger, or of deſpair, than live, and be obliged to work. Attempts have been

made to employ the Arrouages, who are more tractable than the Caribbs, but who, nevertheleſs, are only fit for hunting and fiſhing; exerciſes, of which, being accuſtomed to them in their own country, they are particularly fond. Beſides, if theſe ſavages are not uſed with at leaſt as much mildneſs as domeſtics generally are, in the civilized nations of Europe, they either run away, or pine themſelves to death. Nearly the ſame is it with the ſlaves of Braſil; and yet, of all Savages, theſe ſeem to be the leaſt ſtupid, the leaſt melancholy, and the leaſt ſlothful. Treated with gentleneſs, however, they will do whatever they are deſired, unleſs it be to labour the ground; for tillage they conceive to be the characteriſtic badge, the very eſſence of ſlavery.

The ſavage women are all ſmaller than the men. Thoſe of the Caribbs are fat, and tolerably well-made; their eyes, and their hair, are black; the circumference of their viſage is round; their mouth is ſmall; their teeth are very white; and their carriage is more gay, more chearful, and more open, than that of the men. Yet are they modeſt and becomingly reſerved. Though they daub themſelves with *roucou*, they do not, however, like the men, make black ſtreaks upon the viſage, and upon the body. Their dreſs conſiſts of a kind of apron, in breadth about eight or ten inches, and in length about five or ſix. This apron is generally made of callico, and covered with ſmall glaſs beads; both which commodities they receive from the Europeans who trade with them. They likewiſe wear necklaces, which deſcend over the breaſt, as alſo bracelets round the wriſts and elbows, and pendants in their ears, of blue ſtone, or of glaſs beads. Another ornament there is peculiar to the ſex; namely, a kind of bulkin, made of callico, and garniſhed with glaſs-beads, which covers from the ancle to the upper part of the calf of the leg. On their attain-

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ing the age of puberty, the girls receive an apron, and at the ſame time a pair of buſkins are made for their legs, to which they are calculated to ſtick ſo cloſe that they cannot be removed; and as they neceſſarily prevent the increaſe of the under part of the leg, the upper part becomes proportionably more bulky, and more firm, than it would have been from the natural growth.

So intermixed are the preſent inhabitants of Mexico and New Spain, that hardly do we meet with two viſages of the ſame colour. In the town of Mexico, there are white men from Europe, Indians from the north, and from the ſouth of America, and negroes from Africa, &c. inſomuch, that the colour of the people exhibits every different ſhade which can ſubſiſt between black and white. The real natives of the country are very brown, and of an olive colour, well-made and active; and though they have little hair, even upon the eyebrows, yet upon their head, their hair is very long, and very black.

According to Wafer, the inhabitants of the Iſthmus of America are commonly tall and handſome; their legs are ſlender, their arms are well-made, their breaſt is large; and at the chace they are active and nimble. The women are ſhort, ſquat, and leſs vivacious than the men; though the young ones are tolerably comely, and have lively eyes. Of both the viſage is round; the noſe is thick and ſhort; the eyes are large, and round; and for the moſt part grey, ſparkling, and full of fire, eſpecially in youth; the forehead is elevated; the teeth are white and regular; the lips are thin; the mouth is of a moderate ſize; and, in general, all their features are tolerably regular. The men as well as the women, have black, long, ſtrait, and coarſe hair; and the former would have a beard, did they not eſteem it neceſſary to have it plucked out. Their colour is tawney

tawney; and, as for their eye-brows, they are black as jet.

These people are not the only inhabitants of the Isthmus. We find among them men who altogether different, and who, though few in number, are yet worthy of our notice. These men are white; but theirs is not the white of the Europeans; it rather resembles that of milk, or of the hair of a white horse. Their skin is also covered in a greater or less degree with a kind of short and whitish down; though on the cheeks and the forehead it is not so thick but that the skin may be easily distinguished through it. The hair upon their head, and upon their eye-brows is of a milky white; and the former, which is exceedingly beautiful, is rather frizled, and in length from seven to eight inches.

These people are not so tall as the other Indians; and, what is very singular, their eye-lids are of an oblong figure, or rather in the form of a crescent, whose points turn downwards. So weak are their eyes, that they cannot support the light of the sun, and that they never see well but by that of the moon. In comparison of that of the other Indians, too, their complexion is exceedingly delicate. To all laborious exercises they are averse; and passing the day in repose, they never stir abroad till night. Then, if the moon shines, they scamper through the forests as nimbly (with a proper allowance for their inferior robustness and vigour) as the others can in the day. These men after all, do not form a particular, and a distinct race; and it sometimes happens, that, from parents who are both of a colour yellowish, or coppery, a child is produced exactly as above described. Wafer, who relates these facts, says, that he saw himself a child, not a year old, who had been thus produced.

If this is the case, the strange colour, and temperament, of these white Indians, can only be a kind of malady; which they inherit from their parents.

But,

But, in the ſuppoſition, that, of the laſt fact there is not ſufficient evidence; in other words, that, inſtead of being ſprung from the yellow Indians, they form a ſeparate race; then would they reſemble the Chacrelas of Java, and the Bedas of Ceylan, whom we have already mentioned. If, on the other hand, the fact is true, and theſe white men are actually born of copper-coloured parents, we ſhall have reaſon to believe, that the Chacrelas and the Bedas originate alſo from parents of the ſame colour; and that althoſe white men, whom we find at ſuch diſtances from each other, are individuals who have degenerated from their race by ſome accidental cauſe.

This laſt opinion appears to me, I own, the moſt probable; and had travellers given us as exact deſcriptions of the Bedas, and of the Chacrelas; as Wafer has done of the Dariens, we ſhould, perhaps, have diſcovered, that the former could no more have been of European origin than the latter. What ſeems to give great weight to this notion is, that among the negroes, there are alſo white children born of black parents. Of two of thoſe white negroes we have a deſcription in the hiſtory of the French academy: one of the two I ſaw myſelf; and we are aſſured, there are not a few to be met with in Africa among the other negroes.

From what I have myſelf obſerved, independently of the information of travellers, I have no doubt, but that theſe white negroes are negroes degenerated from their race. Inſtead of being a peculiar and an eſtabliſhed ſpecies of men, they are only particular individuals who happen to form an accidental variety. In a word, they are among the negroes, what Wafer ſays our white Indians are among the yellow Indians, and what, to all appearance, the Chacrelas and the Bedas are among the brown Indians. Still more ſingular it is, not only that this variation never happens but from black to white, but that all the nations

nations of the East-Indies, of Africa, and of America, in which theſe white men are found, are in one latitude. The Iſthmus of Darien, the country of the negroes, and Ceylan, are abſolutely under the ſame line. White, then, appears to be the primitive colour of Nature, which climate, food, and manners, alter, and even change into yellow, into brown, or into black; and which, in certain circumſtances, re-appears, though by no means equal to what it was, on acoount of its corruption from the cauſes here mentioned.

Nature, in her full perfection, has made men white, and Nature, reduced to the laſt ſtage of adulteration, renders them white again. But the white of the ſpecies, or the natural white, is widely different from the white of the individual, or the accidental white. In plants, as well as in men and in animals, do we find examples of this truth. The white roſe, the white gilly-flower, &c. are greatly different, even in point of white, from the red roſes, or the red gilly-flowers, which become white in autumn, after ſuffering the evening-colds, and the froſty chills, of that ſeaſon.

A farther proof ſtill that theſe white men are in fact merely individuals, who have degenerated from their ſpecies, is, that they are all leſs ſtrong, and leſs vigorous, than the others, and that they have eyes extremely weak. This fact will appear leſs extraordinary, when we recollect, that, among ourſelves, thoſe men, who are remarkable for the flaxen fairneſs of their complexion, are commonly remarkable alſo for the weakneſs of their eyes. I have remarked alſo, that ſuch people are often dull of hearing; and it is pretended that thoſe dogs which are abſolutely white, and without a ſpot, are deaf. Whether the obſervation is generally juſt, I know not; all I can aſſert is, that, in a number of inſtances I have ſeen it confirmed.

The

The Indians of Peru are alſo, like thoſe of the Iſthmus, copper-coloured; thoſe eſpecially who live near the ſea, and in the low countries. The inhabitants, however, between the two ridges of the Cordillere-mountains, are almoſt as white as the Europeans. Some live in a ſituation more high than that of others, by the diſtance of a league; and this difference of elevation upon the globe is equal, with reſpect to the temperature of the climate, to that of twenty leagues in latitude. All the native Indians of the main land, indeed, who dwell along the river of the Amazons, and upon the continent of Guinea are tawney, and of a reddiſh colour more or leſs clear. Of the diverſity of the ſhade, ſays M. de la Condamine, the principal cauſe, in all probability is, the different temperature of the air, in the countries which they inhabit; varied as it is, from the extreme heat of the torrid zone, to the cold occaſioned by the vicinage of ſnow.

Some of theſe Savages, as the Omaguas, flatten the viſage of their children, by compreſſing the head between two planks; others pierce the noſtrils, the lips, or the cheeks, for the reception of the bones of fiſhes, of the feathers of birds, and of other ornaments; and the greateſt part bore the ears, enlarge them prodigiouſly, and fill the hole of the lobe with a large bunch of flowers, or herbs, which ſerves them for pendants. With reſpect to thoſe Amazons, about whom ſo much has been ſaid, I ſhall be ſilent. To the authors who have written on the ſubject I refer the reader; and when he has peruſed them he will find, that there is no proof ſufficient to evince the actual exiſtence of ſuch women.

Some authors make mention of a nation in Guinea, of which the inhabitants are more black than any of the other Indians. "The Arras, ſays Raleigh, "are almoſt as black as the Negroes, are vigorous,

gorous, and uſe poiſoned arrows." This author mentions likewiſe another nation of Indians, who have the neck ſo ſhort, and the ſhoulders ſo elevated, that their eyes appear to be upon the latter, and their mouth in their breaſt. This monſtrous deformity cannot ſurely be natural; and it is highly probably that thoſe ſavages, who are ſo highly pleaſed in diſfiguring nature by flattening, by rounding, and by lengthening the head might likewiſe contrive to ſink it into the ſhoulders. Theſe fantaſies might ariſe from an idea that, by rendering themſelves thus deformed, they alſo rendered themſelves more dreadful, and more terrible to their enemies. The Scythians, formerly as ſavage as the Americans are now, evidently entertained the ſame ideas, and realized them in the ſame manner; which no doubt is the foundation of what the ancients have written about ſuch men as they termed acephali, cynocephali, &c.

The Savages of Braſil are nearly of the ſize of the Europeans, but are more vigorous, more robuſt, and more alert: they are alſo ſubject to fewer diſeaſes, and commonly live longer. Their hair, which is white, ſeldom whitens with age. They are of a coppery colour, inclining to red; their head and ſhoulders are large, and their hair is long. They pluck out the beard, the hair upon the body, and even the eye-brows, and the eye-laſhes, from which laſt practice they acquire an extraordinary, and a very fierce look. They pierce the under lip, in order to ornament it with a little bone poliſhed like ivory, or with a kind of a green ſtone. The mothers cruſh the noſe of their children, preſently after they are born; they all go abſolutely naked, and paint the body of different colours.

Thoſe who inhabit the countries adjacent to the ſea are ſomewhat civiliſed by the commerce which, whether voluntarily, or by compulſion, they carry on with

with the Portugueſe; but thoſe of the inland places are ſtill, for the moſt part, abſolute ſavages. Nor was it by force, that any of them became poliſhed. In theſe barbarous nations, the manners were rather formed by the goſpel-miſſions, than by the victorious arms of the princes by whom they were ſubdued. In this method Paraguay was entirely ſubdued: the mildneſs, the good example, the charitable and virtuous conduct, of the miſſionaries touched the hearts of its Savages, and triumphed over their diſtruſt and their ferocity. Often have they, of themſelves, deſired to be made acquainted with that law, which rendered men ſo perfect, ſubmitted to it, and united in ſociety. Nothing can reflect greater honour on religion, than the circumſtance of its having civilized theſe nations, and laid the foundations of an empire, without any arms but thoſe of virtue.

The inhabitants of the country of Paraguay are commonly tolerably tall and handſome; their viſage is rather long; and their colour is olive. There ſometimes rages among them a very uncommon diſtemper. It is a kind of leproſy, which covers the whole of their body, which forms a cruſt ſimilar to the ſcales of fiſh, and from which they experience no pain, nor even interruption of health.

According to Frezier, the Indians of Chili are of a tawney or coppery complexion, like that of the Mulattoes. As theſe come from a white man and a negro-woman, or from a white woman and a negro-man, their colour is brown that is, a mixture, of white and black. Over the whole continent of South America, on the other hand, the Indians are yellow, or rather reddiſh. The inhabitants of Chili are of a good ſize; their limbs are brawney; their breaſt is large; their viſage is little agreeable, and beardleſs; their eyes are ſmall, and their ears long; their hair is black, ſtraight and coarſe. Their ears they lengthen, their beard, they pluck out with pincers made of ſhells; and though the climate is cold, yet

they generally go naked, the ſkins of a few animals excepted, which they wear over their ſhoulders.

It is at the extremity of Chili, and toward the lands of Magellan, that, it is pretended, there exiſts a race of men of gigantic ſize. From the information of ſeveral Spaniards, who had ſeen ſome of theſe giants, Frezier ſays they are from nine to ten feet high. They are diſtinguiſhed by the appellation of *Patagonians*; and, according to the ſame author, they inhabit the eaſterly and unfrequented ſide of the coaſt, as mentioned in the old naratives, which, however, from the circumſtance of Indians being ſeen in the ſtraits of Magellan, who ſize did not exceed that of other men, have ſince been conſidered as fabulous. It might be by this, ſays he, that Froger was deceived in his account of the voyage of M. de Gennes; ſeveral navigators having actually beheld both theſe claſſes of Indians at the ſame time. In 1709, the people of the ſhip the *James*, of Saint-Malo, ſaw ſeven giants, as above-deſcribed, in Gregory-Bay, and thoſe of the ſhip the *Saint-Peter*, of Marſeilles, ſaw ſix, to whom they advanced with offers of bread, wine, and brandy, all of which they rejected.

As M. Frezier does not intimate his having ſeen any of theſe giants himſelf, and as the narratives in which they are mentioned are fraught with exaggerations with reſpect to other matters, it remains ſtill doubtful whether there in reality exiſts a race of men, compoſed entirely of giants; eſpecially if of theſe giants the height is ſuppoſed to be ten feet. Of a man of this ſtature the bodily circumference would be eight times more conſiderable than that of an ordinary man. As the natural height of mankind ſeems to conſiſt of five feet, ſo the deviations from that ſtandard are ſo rare, that a man of ſix feet is in reality conſidered as very tall, and a man of four feet as very ſhort. Giants and dwarfs, therefore, are

are only individual and accidental varieties, not permanent differences, by which fixed and ſettled races may be produced.

Beſides, if theſe giants of the Magellanic regions actually do exiſt, their number muſt be very trifling; as the inhabitants of the ſtraits, and of the neighbouring iſlands, are Savages of a moderate height, whoſe colour is olive, whoſe breaſt is large, whoſe body is tolerably ſquare, whoſe limbs are thick, and whoſe hair is black and ſtraight; Savages, who, in a word, reſemble mankind in general, as to ſize, and the other Americans in particular, as to colour and hair.

In the whole of the new continent, then, there is, it may be ſaid, but one race of men, of which race every individual is more or leſs tawney. The north parts of America excepted, where we find ſome men who are ſimilar to the Laplanders, and others with fair hair who are ſimilar to the northern Europeans, through the whole of this immenſe part of the world the diverſity among the inhabitants is hardly perceivable. Among thoſe of the old continent, on the other hand, we have found a prodigious variety. Of this uniformity in the Americans the reaſon, in my opinion is, that they all live in the ſame manner. The natives were, and are ſtill, either ſavage, or within a degree of being ſo; nor, ſo recently have they been civiliſed, can even the Mexicans and the Peruvians be excluded from the obſervation. Whatever, then, may have been their origin, it ſeems to be an origin common to them all. Sprung from one ſtock, they have hitherto, with little variation, retained the peculiar characteriſtics of their race; and this becauſe they have remained uncivilized, becauſe their mode of life has been nearly ſimilar, becauſe their climate, with reſpect to heat and cold, is by no means ſo unequal as that of the old continent, and becauſe,

becauſe, being newly eſtabliſhed in the country, the cauſes by which varieties are produced have not had time to manifeſt their effects.

Each of the reaſons I have now advanced, merits a particular conſideration. That the Americans are a new people, ſeems to me indiſputable, when we reflect on the ſmallneſs of their number, on their ignorance, and on the little progreſs which the moſt civiliſed among them had made in the arts. In the firſt accounts of the diſcovery and conqueſt of America, it is true, Mexico, Peru, Saint-Domingo, &c. are mentioned as very populous countries; and we are farther told, that the Spaniards had every where to engage with vaſt armies. It is evident, however, that theſe facts are greatly exaggerated; firſt, from the paucity of monuments that are left of the pretended grandeur of theſe nations; ſecondly, from the nature of the country itſelf, which, though peopled with Europeans, more induſtrious, doubtleſs, than its original inhabitants were, is ſtill, nevertheleſs, wild, uncultivated, covered with wood, and little more than a group of inacceſſible and uninhabitable mountains; thirdly, from their own traditions, with reſpect to the time in which they united together in ſociety, the Peruvians making the number of their kings amount to no more than twelve, from the firſt of whom, about three hundred years before, they had imbibed the firſt principles of civiliſation, and ceaſed to be, like the others, entirely ſavage; fourthly, from the ſmall number of men who were employed to conquer ſuch vaſt regions, which, whatever advantage they might derive from the uſe of gun-powder, they could never have done had the people been numerous. Of this aſſertion one proof is, that, though the effects of gun-powder were as new and as terrible to the Negroes, as to the Americans, their country has yet remained unconquered,

quered, and themſelves uninſlaved; and the eaſe with which the invaders of America obtained poſſeſſion of it appears to me an irrefragable argument, that the country was thinly peopled, and, of conſequence, but recently inhabited.

In the New Continent, the temperature of the different climates is much more uniform than in the Old Continent; and for this there are alſo ſeveral cauſes to be aſſigned. Under the torrid zone in America, it is by no means ſo warm as under the torrid zone in Africa. The countries comprehended under the former zone are, Mexico, New Spain, Peru, the land of the Amazons, Braſil, and Guiana. In Mexico, in New Spain, and in Peru, the heat is never very great, as of theſe countries the ſituation is prodigiouſly elevated above the ordinary level of the earth; nor, in the hotteſt weather, does the thermometer ever mount ſo high in Peru, as it does in France. By the ſnow which covers the tops of the mountains the air is cooled; and as this cauſe, which is nothing more than an effect of the former one, has a ſtrong influence upon the temperature of the climate, ſo the inhabitants, inſtead of being black, or of a very dark brown, are only tawney. The land of the Amazons is exceedingly watery, and full of foreſts; and therefore the air is exceedingly moiſt, conſequently much more cool, than it would be in a country more dry. Beſides, it is to be obſerved, that the eaſt wind, which blows conſtantly between the tropicks, does not reach Braſil, the land of the Amazons, or Guiana, without the intervention of a vaſt ſea; and from this it aſſumes a coolneſs which it afterwards communicates to all the oriental countries of equinoctial America. It is from this reaſon, as well as from their being ſo full of rivers and foreſts, their being expoſed to copious and continued rains, that theſe parts of America are ſo exceedingly temperate. But when the eaſt wind,

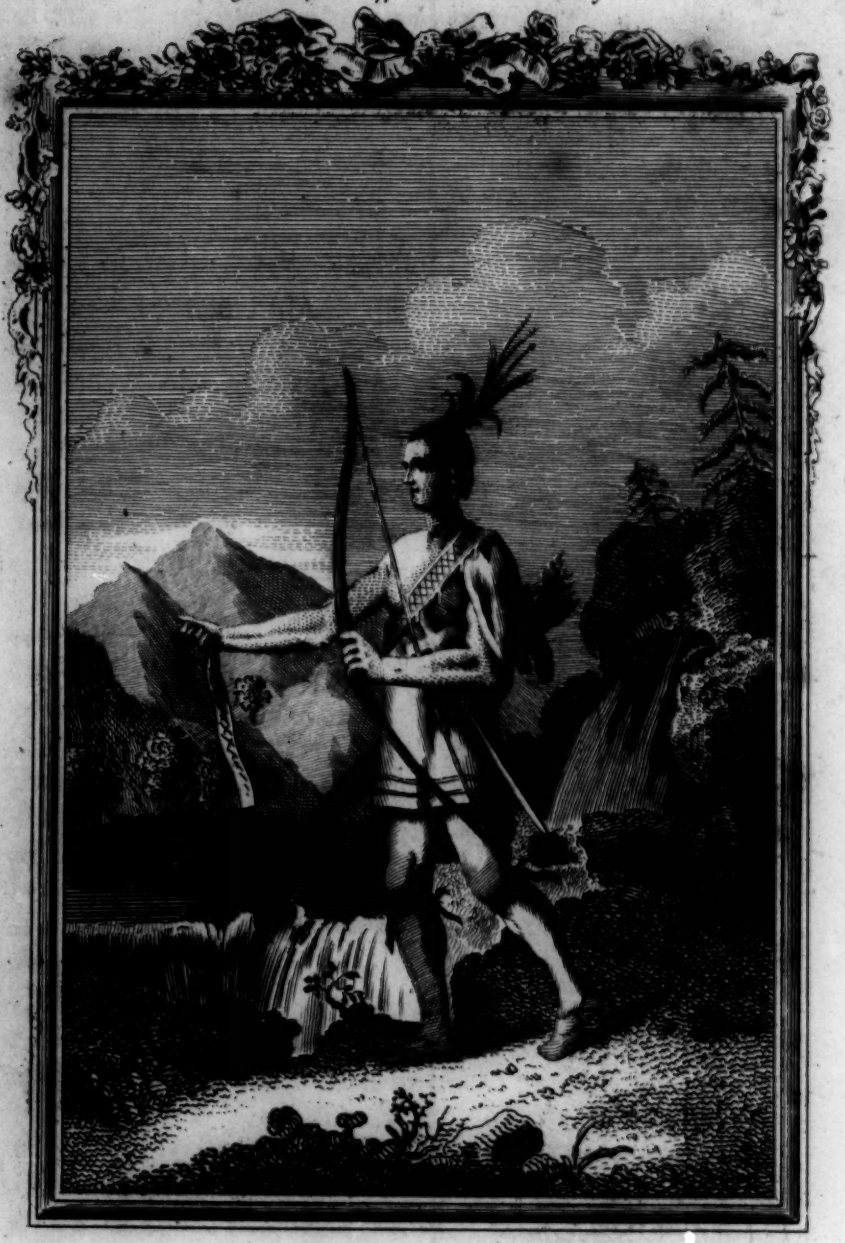
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after having traverſed the low countries of America, has reached Peru, its warmth becomes more conſiderable; and therefore, were it not for its elevated ſituation, and for the ſnow, by which the air is cooled, and by which the eaſt wind is deprived of all the warmth which it might have acquired in making its way thither, the heat would be greater in that country, than either in Braſil or in Guiana. Yet of this there is ſtill a ſufficiency to influence the colour of the inhabitants; evidently as it appears, that of thoſe who, by their ſituation, are moſt expoſed to it, the colour is moſt yellow, and that, of thoſe who live ſheltered in the vallies, between the mountains, the ſkin is infinitely more fair. Beſides, the wind which thus viſits the lofty Cordillere-mountains, muſt be reflected to a conſiderable diſtance over the neighbouring countries, and diffuſe over them that coolneſs which it received from the ſnow that covers their tops; and from this ſnow itſelf, while it diſſolves, cold winds muſt neceſſarily ariſe. All theſe cauſes concurring, therefore, to render the climate of the torrid zone in America far leſs hot, it is not ſurpriſing, that its inhabitants are not black, nor even brown, like thoſe under the torrid zone in Africa and in Aſia, where, as will preſently be ſeen, there is a wide difference of circumſtances. Whether we ſuppoſe, then, that the Americans have been from great antiquity naturalized in that country, or that they have come thither more recently, as of their torrid zone the climate is temperate, they are, of courſe, not black.

The uniformity in their mode of living is another reaſon, which I aſſigned for the little variety to be found in the natives of America. As they were all ſavage, or, if civilized, very recently ſo, they all naturally lived, or had lived, in the ſame manner. In ſuppoſing that they had all one common origin, the races were diſperſed, without being intermixed; each


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THE AMERICAN.

each family formed a nation ſtill ſimilar to itſelf, and nearly ſimilar to the others, becauſe their climate, and their food, were alſo nearly ſimilar; and as they had no opportunity either to degenerate, or to improve, ſo they could not but remain conſtantly, and almoſt univerſally the ſame.

That their origin is the ſame with our own, I do not doubt, independently even of every theological argument; and, from the reſemblance of the Savages of North America to the Oriental Tartars, there is ſufficient reaſon to ſuppoſe them anciently ſprung from that people. The new diſcoveries which the Ruſſians have made, on the other ſide of Kamtſchatka, of ſeveral territories, and iſlands which extend even to a part of the Weſt Continent of America, would leave no uncertainty as to the poſſibility of the communication, if theſe diſcoveries were properly authenticated, and if the territories themſelves were in any degree contiguous. But, even in the ſuppoſition, that, between theſe there are conſiderable ſpaces of ſea, is it not very poſſible, that there might have been men who croſſed them, and who either went of themſelves in ſearch of thoſe new regions, or were driven upon them by bad weather? Between the Mariana-iſlands and Japan there is, perhaps, a greater interval of ſea than between any of the territories beyond Kamtſchatka, and thoſe of America; and yet the Mariana-iſlands are found to be peopled with men, who could have come from no part but from the Eaſtern Continent.

I am inclined to believe, therefore, that the firſt men who ſet foot on America, landed on ſome ſpot northward of California; that by the exceſſive cold of this climate they were obliged to remove to the more ſouthern parts of their new abode; and that at firſt they ſettled in Mexico, and in Peru, whence they afterwards diffuſed themſelves over all the different

parts

parts both of North and of South America. Mexico and Peru, I particularly mention, as theſe ought to be conſidered as the moſt ancient territories of this continent, as well as thoſe of moſt ancient population; being not only the moſt elevated in ſituation, but alſo the only ones in which the inhabitants were found connected together in ſociety.

With great probability may it alſo be preſumed, that the inhabitants of North America, of Davis's Straits, as well as of the northern parts of the land of Labrador, come from Greenland; between which country, and that of America, the only ſeparation is formed by theſe Straits, which are by no means very conſiderable. The ſimilarity between the Savages of Davis's Straits, and thoſe of Greenland, we have very lately had occaſion to remark; and as for the manner in which Greenland might have been peopled, we may with ſufficient reaſon ſuppoſe, that the Laplanders paſſed thither from Cape-Nord, the intermediate diſtance being only about one hundred and fifty leagues. Beſides, as the iſland of Iceland is almoſt contiguous to Greenland; as it was in very ancient times inhabited, and actually frequented, by Europeans; and as the Danes had even formed colonies in Greenland, it is not wonderful that in this country there ſhould be found men, who, deriving their origin from thoſe Danes, were fair-haired and white-ſkinned. There is ſome probability, alſo, that the white men, who are found at Davis's Straits, derive their origin from theſe Europeans thus ſettled in Greenland; whence they might eaſily have obtained a paſſage to America, by croſſing the little interval of ſea, of which Davis's Strait is formed.

In colour, and in figure, we meet not with a greater degree of uniformity in America, than of diverſity in Africa. From great antiquity has this part of the world been very copiouſly peopled. Though the

the climate is ſcorching, it is yet, in different countries, of a very different temperature; nor, as from the deſcriptions already given we have had an opportunity to remark, is there a greater affinity between the manners of the different tribes of which thoſe countries are compoſed. From many concurrent cauſes, there ſubſiſts a greater variety among the human ſpecies in Africa, than in any other part. If, in the firſt place, we examine the difference in the temperature of the African countries, we ſhall find, that, as the heat is not exceſſive in Barbary, and in the whole of the territories near the Mediterranean ſea, ſo the men there are white, or only ſomewhat tawney. Thoſe territories are refreſhed, on one hand, by the air of the Mediterranean ſea; and on the other, by the ſnow of Mount Atlas; and as they are, moreover, ſituated in the temperate zone, on this ſide of the tropic, ſo of all the tribes, whoſe ſituation is between Egypt and the Canary-iſlands, the ſkin is only more or leſs tawney. Beyond the tropic, and on the other ſide of Mount Atlas, the heat becomes more violent, and the colour of the inhabitants aſſumes a hue more dark, though ſtill not black. Afterwards, in the ſeventeenth or eighteenth degree of north latitude, we find Senegal and Nubia, of which the heat is exceſſive, and therefore the inhabitants are abſolutely black. In Senegal the thermometer riſes to the degree 38, while in France it very rarely riſes to the degree 30; and in Peru, ſituated as it is under the torrid zone, it is almoſt always at the ſame degree, and is hardly ever known to paſs the degree 25. We are not in poſſeſſion of any obſervations made with the thermometer in Nubia; but all travellers agree in repreſenting the heat of that country as exceſſive. From the ſandy deſerts, between Upper Egypt and Nubia, ſuch a degree of heat is communicated to the air, that the north wind of the latter actually ſcorches.

The eaſt wind alſo, which is uſually the prevalent wind between the tropics, does not reach Nubia till it has croſſed the territories of Arabia, and till it has, in conſequence, aſſumed a heat which the ſmall intervenient ſpace of the Red Sea is little ſufficient to temper. That the Nubians ſhould be black, therefore, there is little cauſe to wonder; though indeed they are ſtill leſs ſo than thoſe of Senegal, where, as the eaſt wind cannot arrive till it has traverſed all the territories of Africa, in their utmoſt extent, the heat is neceſſarily rendered inſupportable.

If we take in general, then, all that diſtrict of Africa, which is compriſed between the tropics, and in which the eaſt wind blows more conſtantly than any other, we ſhall eaſily conceive, that the inhabitants of all the weſtern coaſts of this part of the world muſt, and actually do, experience a degree of heat much more great than thoſe of the eaſtern coaſts; as the eaſt wind reaches the latter with the freſhneſs which it receives in paſſing over a vaſt ſea, whereas, before it reaches the former, it aſſumes a burning heat, in traverſing the territories of Africa. Thus, therefore, the coaſts of Senegal, of Sierra-Liona, of Guinea, in a word, all the weſtern regions of Africa, which are ſituated under the torrid zone, are the hotteſt climates in the world; nor is it by any means ſo much ſo upon the eaſtern coaſts of Africa, at Moſambique, Mombaze, &c.

I have not the ſmalleſt doubt, therefore, but that this is the reaſon that we find the real Negroes, in other words, the blackeſt of all the black men, in the weſtern territories of Africa; and that, on the contrary, we find the Caffres, that is to ſay, black men of a hue more light, in the eaſtern territories. The evident difference which ſubſiſts between theſe two ſpecies of blacks, proceeds from that of the heat of their climate, which is only very great in the eaſtern, but exceſſive and intolerable in the weſtern,

weſtern, parts of Africa. Beyond the tropic, on the ſouth ſide, the heat is conſiderably diminiſhed. This happens, not only from its ſituation as to latitude, but from the point of Africa being contracted; and as that point is environed with the ſea on all ſides, the air is neceſſarily much more temperate than it could be in the middle of a continent. Thus does the colour of the inhabitants of this country begin to aſſume a fairer hue, and it is by nature even rather white than black. Nothing, in my opinion, affords a more convincing proof, that the climate is the principal cauſe of the variety in the human ſpecies, than the colour of the Hottentots; who could not poſſibly be found leſs black, did they not enjoy a more temperate climate; and if to this ſingle proof all thoſe different proofs are added, which may be derived from the circumſtances already laid down, no longer will a ſingle doubt remain upon the ſubject.

In this opinion we ſhall be the more confirmed, the more we examine all the other nations under the torrid zone, on the other ſide of Africa. Of the inhabitants of the Maldiva-iſlands, of Ceylan, of the point of the peninſula of India, of Sumatra, of Malaca, of Borneo, of Celebes, of the Philippins, &c. as being all either iſlands or peninſulas, the colour is exceedingly brown, though not abſolutely black. In theſe climates, the heat of the air is rendered more temperate by the ſea; nor can that heat be ever ſo great as in the interior parts, or on the weſtern coaſts of Africa, as neither the eaſt nor the weſt wind, which reign alternately in that part of the globe, can reach the territories of the Indian Archipelago, without paſſing over ſeas of an immenſe extent. As their heat is not exceſſive, therefore, all theſe iſlands are peopled with men of a brown colour; but in New Guinea, or the land of the Papous, we again meet with men who are black,

and who, from the deſcriptions of travellers, ſeem to be abſolute Negroes, as the country they inhabit forms a continent to the eaſt, and as the wind to which they are expoſed is much more hot than that which prevails in the Indian ocean. In New Holland, where, as it is more remote from the water, the heat of the climate is leſs great, we once more find people leſs black, and not unreſembling the Hottentots. Do not theſe Negroes, and theſe Hottentots, whom we meet with in the ſame latitude, and at ſo great a diſtance from the other Negroes, and from the other Hottentots, evince, that their colour depends ſolely and ultimately upon the heat of the climate? That there was ever any communication between Africa, and this auſtral continent, it is impoſſible to ſuppoſe; and yet in both we find the ſame ſpecies of men, becauſe in both we find circumſtances which may occaſion the ſame degrees of heat.

From the animal creation we may obtain a farther confirmation of what has been above advanced. In Dauphiny, for example, it has been obſerved that all the hogs are black; and, on the contrary, that on the other ſide of the Rhone, in Vivarais, where it is more cold than in Dauphiny, all the hogs are white. There is no probability, that the inhabitants of theſe two provinces ſhould have entered into an agreement to breed, the former none but black hogs, and the latter none but white ones; and to me it appears, that this difference cannot ariſe but from the difference of the temperature of the climate, combined, perhaps, with that of the food of the animal.

The Blacks, who have been found, though in very ſmall numbers, in the Philippin, and in a few other iſlands of the Indian ocean, ſeem to originate from the Papous, or Negroes of New-Guinea, whom the Europeans have not known much longer than half a century. Of this region Dampier diſcovered

covered the moſt Eaſtern part in 1700, and gave it the name of *New-Britain*; and though we are ſtill ignorant of its extent, yet we know that, ſo far as has been hitherto diſcovered, it is not very populous.

In thoſe climates alone, then, where every circumſtance combines to create a conſtant, and an invariably-exceſſive heat, do we meet with Negroes. To the laſt degree neceſſary is this heat, not only to the production, but even to the preſervation, of Negroes; and in other places, where the heat, though violent, is not, however, comparable to the heat of Senegal, the new-born infants of Negroes are ſo ſuſceptible of the impreſſions of the air, that there is a neceſſity for keeping them, during the firſt nine days, in apartments cloſely ſhut, and exceedingly hot. If this precaution is omitted, and they are expoſed to the air the minute of their birth, a convulſion in the jaw ſucceeds, of which, being prevented from receiving any ſuſtenance, they preſently die.

In the hiſtory of the Academy of Sciences we read, that M. Littre, in diſſecting a Negro in 1702, remarked, that the point of the gland which was not covered with the prepuce, was black like the whole of the ſkin, and that the reſt, which was covered, was perfectly white. From this obſervation it is evident, that the action of the air is neceſſary, in order to produce the blackneſs of the ſkin in Negroes. Their children are born white, or rather red, like thoſe of other men; but, two or three days after the birth, the colour changes, they appear of a tawney yellow, which grows gradually more and more brown, and, by the ſeventh or eighth day, they are completely black. All children, it is known, have, two or three days after they come into the world, a kind of jaundice. In white children, the effect of this jaundice is tranſitory, and leaves no impreſſion upon the ſkin; in Negro-children, on the contrary,

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it gives a colour to the ſkin, which is never effaced, and which continues to grow more and more black.

M. Kolbe mentions his having obſerved, that the children of Hottentots, who are born white like thoſe of Europeans, become olive-coloured by the effect of this jaundice, which diffuſes itſelf over the ſkin, three or four days after the birth of the child, and which never diſappears afterwards. This jaundice, however, and the actual impreſſion of the air, ſeem to me to be only occaſional cauſes of this blackneſs, and not the primary cauſe of it; ſince it is remarked, that the children of Negroes have, in the inſtant of their birth, a blackneſs at the root of the nails, and in the genital parts. The action of the air, and the jaundice, may indeed ſerve to extend this blackneſs; but ſtill it is certain, that the principle of it is communicated to the children by their parents; that in whatever country a Negro may be born, he will be as black as if he had been born in his own country; and, that if there is any difference in the ſubſequent generation, it is ſo inſenſible, as never yet to have been perceived.

From this circumſtance, however, we are not authoriſed to ſuppoſe, that, after a certain number of generations, the colour would not undergo a very ſenſible change. There is, on the contrary, every reaſon in the world to preſume, that, as it proceeds originally from the heat of the climate, and from the long-continued action of that heat, it would diſappear by little and little, by the temperature of a cold climate; and that, conſequently, were a few Negroes to be removed into a northern country, their deſcendants, at the eighth, tenth, or twelfth generation, would be much leſs black than their anceſtors, and perhaps as white as the original natives of the cold climate, in which they might have fixed their reſidence.

Many

Many have been the reſearches of anatomiſts, in order to determine in what part of the ſkin, the black colour of Negroes reſides. Some pretend, that it is neither in the body of the ſkin, nor in the epidermis, but in the reticular membrane, which is between the epidermis and the ſkin; that this membrane, though waſhed, and held ever ſo long in warm water, does not, however, change colour; and that, on the other hand, the ſkin, and the ſurface of the ſkin, appear to be nearly as white as thoſe of other men. Doctor Towns, in his letter addreſſed to the Royal Society of London, and a few other writers, maintain, that the blood is more black in Negroes than in white men; a fact, which, though I have not myſelf had an opportunity to authenticate, I am yet inclined to admit, as I have remarked, that, among ourſelves, of the men who are tawney, yellow, or brown, the blood is proportionally more black than that of others; and from this circumſtance the inference which the advocates for this opinion draw is, that the complexion of the Negroes originates from the colour of their blood. Mr. Barrere, who ſeems to have examined the matter more narrowly than any other writer on the ſubject, ſays, as well as Mr. Winſlow, that the epidermis of Negroes is black; and that if, on examination, it appears white, it is by reaſon of its exceeding thinneſs, and tranſparency. They alſo aſſure us, that their ſkin is of a reddiſh-brown, inclining to black.

According to Mr. Barrere, this colour of the epidermis, and of the ſkin of Negroes, is produced by the bile, which in them is not yellow, but always black as ink; of which he imagines he received a certain proof from the bodies of ſeveral Negroes which he had occaſion to diſſect at Cayenne. When the bile is diffuſed, it does indeed tinge the ſkin of white men of a yellow hue; and it is probable, that

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if the former were black, the latter would be black alſo. But, as when the overflow of the bile ceaſes, the ſkin recovers its natural whiteneſs, ſo, on this principle, there is a neceſſity for ſuppoſing, that, in the Negroes, there is always an overflow of bile, or at leaſt that, as Mr. Barrere himſelf obſerves, it is ſo abundant, as naturally to ſeparate itſelf in the epidermis, in a quantity ſufficient to communicate this black colour.

After all, there is a probability, that the bile, and the blood, of Negroes are more brown than thoſe of white men, in proportion as their ſkin is more black. But one of theſe facts can never contribute to give an explanation of the cauſe of the other; for, if it is pretended, that it is the blood, or the bile, which, by its blackneſs, communicates this colour to the ſkin, then, inſtead of enquiring why the ſkin of Negroes is black, we enquire why their bile, or their blood is ſo; and thus, by deviating from the queſtion, we find ourſelves more than ever remote from the ſolution of it. For my own part, I own, I have always been of opinion, that the cauſe which renders a Spaniard more brown than a Frenchman, and a Moor than a Spaniard, is alſo the cauſe which renders a Negro more brown than a Moor. At preſent, however, we mean not to enquire in what manner this cauſe acts, but only to aſſure ourſelves that it does act, and that its effects are the more conſiderable, and the more ſenſible, in proportion to the force, and to the continuance of its action.

Of the blackneſs of the ſkin the principal cauſe is the heat of the climate. When this heat is exceſſive, as at Senegal, and in Guinea, the inhabitants are entirely black; when it is rather leſs violent, as on the eaſtern coaſts of Africa, they are of a ſhade more light; when it begins to be ſomewhat more temperate, as in Barbary, in Mogul, in Arabia,

bia, &c. they are only brown; and, in fine, when it is altogether temperate, as in Europe and in Aſia, they are white, and the varieties which are there remarked, proceed ſolely from thoſe in the mode of living. All the Tartars, for example, are tawney, while the Europeans, who live in the ſame latitude, are white. Of this difference the reaſons ſeem to be, that the former are always expoſed to the air; that they have no towns, no fixed habitations; that they ſleep upon the earth; and in every reſpect live coarſely and ſavagely. Theſe circumſtances alone are ſufficient to render them leſs white than the Europeans, to whom nothing is wanting which may render life comfortable and agreeable. Why are the Chineſe more white than the Tartars, whom they reſemble in all the features of the viſage? It is becauſe they live in towns, becauſe they are civilized, becauſe they are provided with every expedient for defending themſelves from the injuries of the weather, to which the Tartars are perpetually expoſed.

When cold becomes extreme, however, it produces ſome effects ſimilar to thoſe of exceſſive heat. The Samoeids, the Laplanders, the Greenlanders, are very tawney; and it is even aſſerted, as we have already obſerved, that, among the Greenlanders, there are men as black as thoſe of Africa. Here, we ſee, the two extremes meet; violent cold and violent heat produce the ſame effect upon the ſkin, becauſe theſe two cauſes act by one quality which they poſſeſs in common. Dryneſs is this quality; and as it is a quality of which intenſe cold is equally productive as intenſe heat, ſo by the former, as well as by the latter, the ſkin may be dried up, altered, and rendered as tawney as what we find it among the Laplanders. Cold compreſſes, ſhrivels, and reduces within a narrow compaſs, all the productions of nature; and thus it is that we find the Laplanders, who are perpetually expoſed to all

the rigours of the moſt piercing cold, the moſt diminutive of the human ſpecies.

The moſt temperate climate is between the degrees of forty and fifty. There we behold the human form in its greateſt perfection; and there we ought to form our ideas of the real and natural colour of man. Situated under this zone the civilized countries are, Georgia, Circaſſia, the Ukraine, European Turkey, Hungary, South Germany, Italy, Switzerland, France, and the North of Spain; of all which the inhabitants are the moſt beautiful, and the moſt ſhapely, in the world.

As the firſt, and almoſt the ſole, cauſe of the colour of mankind, we ought therefore to conſider the climate; and though upon the ſkin, the effects of nouriſhment are trifling, when compared with thoſe of the air and ſoil, yet upon the form they are prodigious. Food which is groſs, unwholeſome, or badly prepared has a ſtrong and a natural tendency to produce a degeneracy in the human ſpecies; and in all countries where the people fare wretchedly, they alſo look wretchedly, and are more ugly, and more deformed than their neighbours. Even among ourſelves, the inhabitants of country places are more ugly than the inhabitants of towns; and I have often remarked, that, in one village, where poverty and diſtreſs were leſs prevalent than in another village of the vicinity, the people of the former were, at the ſame time, in perſon more ſhapely, and in viſage leſs ugly.

The air and the ſoil have alſo great influence, not only on the form of men, but on that of animals, and of vegetables. Let us, after examining the peaſants who live on hilly grounds, and thoſe who live imboſomed in the neighbouring valleys, compare them together, and we ſhall find, that the former are active, nimble, well-ſhaped, and lively; the women, commonly handſome; that, on the contrary, the latter, in proportion

portion as the ſoil, the air, and the water are more groſs and unrefined, are clumſy, badly proportioned, heavy, and ſtupid; the women almoſt without exception ugly.

Bring into France a ſtring of horſes from Spain, or from Barbary, and attempt to perpetuate their breed. The object is impracticable. From the very firſt generation, they begin to degenerate; and by the third or fourth, without an intermixture with other races, they become downright French horſes. So ſtriking, then, is the influence of climate, and of nouriſhment, upon the form of animals, that the effects of either are poſitive and indubitable; and though they are leſs ſudden, leſs apparent, and leſs ſenſible upon men, yet, from analogy, we muſt conclude, that they alſo extend to the human ſpecies, and that, in the varieties we find therein, they plainly manifeſt themſelves.

From every circumſtance, therefore, may we obtain a proof, that mankind are not compoſed of ſpecies eſſentially different from each other; that, on the contrary, there was originally but one individual ſpecies of men, which, after being multiplied and diffuſed over the whole ſurface of the earth, underwent divers changes, from the influence of the climate, from the difference of food, and of the mode of living, from epidemical diſtempers, as alſo from the intermixture, varied *ad infinitum*, of individuals more or leſs reſembling each other; that, at firſt, theſe alterations were leſs conſiderable, and confined to individuals; that, afterwards, from the continued action of the above cauſes becoming more general, more ſenſible, and more fixed; they formed varieties in the ſpecies; that theſe varieties have been, and are ſtill, perpetuated from generation to generation, in the ſame manner as certain deformities, and certain maladies, paſs from parents to their children; and that, in fine, as they would never have been

been produced but by a concurrence of external and accidental cauſes, as they would never have been confirmed and rendered permanent but by time, and by the continued action of theſe cauſes, ſo it is highly probable, that in time they would in like manner gradually diſappear, or even become different from what they at preſent are, if ſuch cauſes were no longer to ſubſiſt, or if they were in any material point to vary.

THE

THE NATURAL HISTORY OF ANIMALS.

CHAP. I.

Of the Nature of Animals.

AS it is by comparing things alone, that we are enabled to judge of them; as, indeed, the whole of our knowledge turns upon the relations by which one object differs from another; and as, if there existed no animals, the nature of the human being would be still more incomprehensible than it is; after having considered man in himself, ought we not to derive every assistance we can from this mode of comparison? Ought we not to examine the nature of animals; to compare their organisation; to study the animal œconomy in general in order thereby to make particular applications; to mark the resemblances; to seize the differences; and, from the assemblage of these combinations, to derive so much intelligence as clearly to distinguish the principal effects of living mechanism, and to make a farther progress in that important knowledge of which man himself is the object?

Let

Let us begin by ſimplifying things, and let us endeavour to reduce, within its proper limits, a ſubject which at firſt view appears to be immenſe. The properties which animals poſſeſs in common with matter, come not within our preſent conſideration, at leaſt in an abſolute manner. The body of an animal has extenſion, weight, impenetrability, and figure; is capable of being put in motion, or conſtrained to remain in one place, by the action, or by the reſiſtance, of extraneous bodies. Theſe are properties which belong to matter in general; and as they by no means ſerve to characteriſe the nature of animals, ſo they ought only to be employed relatively, as in comparing, for example, the ſize, the weight, the figure, &c. of one animal, with the ſize, the weight, the figure, &c. of another animal.

In like manner we ought to ſeparate from the animal œconomy, properly ſo termed, ſuch faculties as are found equally to belong to the vegetable, and to the animal; as thoſe, for example, of receiving nouriſhment, of admitting of development, and of re-production. As in the claſs of animals we, moreover, comprehend a number of animated beings, whoſe organiſation is highly different from ours, as well as from that of the animals who moſt reſemble us in the compoſition of the body; ſo we ought to wave the conſideration of this particular ſpecies of animal nature, and to confine ourſelves to the nature of thoſe animals to which we have evidently the greateſt affinity. By the animal œconomy of an oyſter, for example, ſince it forms no part of our preſent enquiry, it would be abſurd, that our attention ſhould in any degree be engaged.

But as the nature of man is ſuperior to that of animals, ſo of that ſuperiority it ought to be our ſtudy to demonſtrate the cauſe, and by clear and ſolid proofs to eſtabliſh the preciſe degree; in order that

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we may diſtinguiſh what belongs to man ſolely, from what belongs to him in common with an animal.

Previous to our examination of the minute parts of the animal machine, and of the peculiar functions of each of thoſe parts, let us view the general reſult of this mechaniſm, and without attempting at firſt to reaſon upon cauſes, confine ourſelves to an elucidation and eſtabliſhment of effects.

An animal has two modes of exiſtence: an exiſtence when in motion or awake, and an exiſtence when at reſt or aſleep; and theſe, while life laſts, ſucceed each other alternately. In the former ſtate, all the ſprings of the animal machine are in action: in the latter, there is only a part of them ſo; and this part, which is in action while the animal is aſleep, is alſo in action while it is awake, and is therefore of abſolute neceſſity, ſince it can in no reſpect exiſt without it. The latter is independent of the former, as it acts of itſelf; the former, on the contrary, depends on the latter, as it cannot exerciſe itſelf alone. The one is the fundamental part of the animal œconomy, ſince it acts continually, and without interruption; the other is a leſs eſſential part, ſince it never acts but by intervals, and alternately.

This firſt diviſion of the animal œconomy appears to me natural, general, and well founded. An animal which is aſleep, or at reſt, is a machine leſs complicated, and more eaſy to be examined, than an animal which is awake, or in motion. This difference is eſſential, and is not a ſimple change of ſituation, as in an inanimate body, which may equally and indifferently be either at reſt or in motion; for in which ever of theſe ſtates an inanimate body may be, in that ſtate it will perpetually remain, unleſs conſtrained to quit it by ſome external power or reſiſtance. By its own powers, however, the animal changes its condition; and naturally, and without conſtraint,

conſtraint, it paſſes from repoſe to action, and from action to repoſe. The period for awaking returns as neceſſarily as the period for ſleeping, and both arrive independently of any foreign cauſe; ſince in either ſtate, the animal cannot exiſt but for a certain time, and ſince an uninterrupted continuity of watchfulneſs, or of ſleep, of action or of reſt, would alike tend to ſtop the continuity of the vital motion.

In the animal œconomy, therefore, we may diſtinguiſh two parts, of which the one acts perpetually, and without interruption, and the other acts only by intervals. In the action of the heart, and of the lungs, in an animal that breathes, and of the heart alone, in the fœtus, ſeems to conſiſt the former of theſe; as does the latter in the action of the ſenſes, and in the movement of the body, and of the members.

If we imagine beings endowed by nature with only the firſt part of this animal œconomy, theſe beings, though neceſſarily deprived of ſenſe, and of progreſſive motion, would neceſſarily be animated beings, and different in nothing from animals that are aſleep. An oyſter, which appears to have no external movement, no external ſenſe, is a being formed to ſleep for ever. In this ſenſe a vegetable is merely an animal that ſleeps; and in general the functions of every organiſed being, which is deſtitute both of ſenſe and of movement, may be compared to the functions of an animal, which, by its nature, is doomed to a perpetual ſleep.

In animals a ſtate of ſleep is not, then, an accidental ſtate, occaſioned by the greater or leſs exerciſe of their functions, while awake. It is, on the contrary, an eſſential mode of exiſtence, which ſerves as a baſis to the animal œconomy. By ſleep our exiſtence begins; the fœtus ſleeps almoſt continually; and the infant is much more often aſleep than it is awake.

Sleep,

Sleep, which ſeems to be a ſtate purely paſſive, which ſeems to be a ſtate reſembling that of death, is, on the contrary, then, the ſtate which a living animal firſt experiences, and is, as it were, the foundation of life. It is not a privation, an annihilation; it is a mode, a form, of exiſtence altogether as real as, and more general than, any other. In this mode we exiſt, before we enjoy another exiſtence: in this mode all organiſed beings, void of ſenſe exiſt; in a ſtate of continual movement none exiſt; and of none it is found that the exiſtence does not partake, more or leſs, of this ſtate of repoſe.

Confined to that part which acts ſolely and continually, even the moſt perfect animal will not appear different to us from thoſe beings to which with reluctance we give the appellation of animal. As to external functions, we ſhall conſider it as nearly upon a level with a vegetable; for, however different may be the internal organiſation of an animal and a vegetable, the inferences we ſhall then neceſſarily draw from either will be the ſame. They will each receive nouriſhment; they will each be found capable of growth, and of expanſion; they will each poſſeſs certain principles of internal motion; they will each live like a vegetable. But of progreſſive motion, of action, of ſentiment, they will be equally deſtitute; nor will they be endowed with any exterior ſign, any apparent character, by which animal life may be diſtinguiſhed.

Let us, however, inveſt this internal part with a ſuitable enveloped cover; in other words, let us give it ſenſe, and let us give it members. This done, animal life will preſently manifeſt itſelf; and the more this cover ſhall contain of ſenſe, of members, and of other external parts, the more will the animal life appear to us perfect. It is by this cover, then, that animals differ from each other. The

internal part, which compoſe the foundation of the animal œconomy, belongs, without exception, to all animals; and in man, and in thoſe animals which have fleſh and blood, it is, as to form, nearly the ſame. The external cover, however, is widely different; and it is at the extremities of this cover that the greateſt differences ſubſiſt between the conſtruction of the human, and of the animal frame.

In order, more clearly to elucidate this argument, let us compare the body of a man with the body of an animal; with that, for example, of a horſe or an ox. We ſhall then find, that in each the heart and the lungs, or, more generally to expreſs it, the organs of circulation, and of reſpiration, are nearly the ſame; but that the external part of the cover is highly different. The materials of which the animal body is compoſed, though ſimilar to thoſe of the human body, vary, however, greatly as to number, ſize, and poſition; and thereby the diſſimilitudes in their reſpective forms are rendered very wide. Beſides, if we attend to it, we ſhall find that the greateſt differences are at the extremities, and that it is with reſpect to theſe extremities, that the body of a man differs chiefly from the body of an animal. In dividing the body into three principal parts, the trunk, the head, and the members; we find, that in the head and the members, which are the extremities of the body, conſiſts the moſt material difference between man and the animal. In conſidering afterwards the extremities of each of theſe three principal parts, we diſcover, that the greateſt difference in the trunk is at the upper end under the extremity of that part; ſince, in man, there are, at the upper extremity, clavicles, which in the generality of animals are wanting. In like manner, at the under extremity of the trunk of the animal, there is a certain number of exterior vertebræ, by which a tail is formed to it; and at that extremity of the human

human body there are no ſuch vertebræ to be found. The inferior extremity of the head alſo, as the jaw-bones, and the upper extremity of the head, as the bones of the forehead, differ prodigiouſly in man and in the animal; the jaw-bones of the latter being, at leaſt in the majority of the animal ſpecies, very long, and the bones of the forehead, on the contrary, very ſhort. Finally, by comparing the members of an animal with the members of a man, we perceive, ſtill more plainly, that it is at the extremities they differ moſt; no two things, in fact, bearing a ſtronger reſemblance to each other, than they do, at the very firſt glance, the hand of a man, and the foot of a horſe, or of an ox.

If we take the heart, then, for the center in the animal machine, we ſhall find that, in the œconomy of that part, and of the other parts adjacent to it, there is a perfect reſemblance between man and the animals; but the more we remove from this center, the more they become conſiderable; and when, in the center itſelf there is found any difference, then the animal is infinitely more different from man; it is, as it were, of another nature, and poſſeſſes nothing in common with the animals which we are now conſidering. In the majority of inſects, for example, there is a peculiar organiſation of this principal part of the animal œconomy. Inſtead of heart and lungs, they are found to have parts which as being in like manner ſubſervient to the vital functions, have been conſidered as analagous to thoſe viſcera, but which in reality widely differ from them, not more in their ſtructure, than in the reſult of their action; and therefore are inſects to the laſt degree, different, not only from man, but from all other animals. A minute difference in this center of the animal œconomy is always accompanied with a difference infinitely more great in the exterior parts. The tortoiſe, whoſe heart is of a peculiar conformation,

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is alſo a very extraordinary animal; nor does it reſemble any other animated being.

In conſidering man, quadruped-animals, birds, cetaceous animals, fiſhes, amphibious animals, reptiles, &c. what prodigious variety do we find in the figure, in the proportion of the body, in the number and poſition of the members, in the ſubſtance of the fleſh, of the bones, of the faguments! Quadrupeds have it may be ſaid generally, tails and horns; nor are the extremities of their body ſimilar to thoſe of man: cetaceous animals live in another element; and though they are multiplied by a mode of generation ſimilar to that of quadrupedes, yet they differ greatly from them in form, having no inferior extremities: birds ſeem to differ from them ſtill more by their beak, their feathers, their wings, and their propagation by eggs: fiſhes and amphibious animals are yet fatther removed from the human form: reptiles have no members. In the whole exterior covering there is the greateſt diverſity; and, on the contrary, their interior conformation is nearly the ſame; they have all a heart, a liver, a ſtomach, inteſtines, organs for generation; and theſe ought to be conſidered as parts of all others to be moſt eſſential to the animal œconomy, ſince of all others they are the moſt fixed and certain, and the leaſt ſubject to variety.

But it is to be obſerved, that, even in the *envelope*, or cover, there are alſo ſome parts more fixed and certain than others. Of the ſenſes, certain ones in particular, none of the animals we now conſider are diveſted. In treating of the ſenſe in general, we have explained in what manner they may be capable of the touch. The nature of their ſmell, and of their ſmell we know not, but we are aſſured that they all enjoy the ſenſe of ſeeing, and perhaps that of hearing alſo. The ſenſes may be conſidered, then, as another eſſential part of the animal œconomy, as well as the brain and its appendages, from which,

which, in fact, the ſenſes derive their origin, and on which they exerciſe their firſt action. In inſects themſelves, which differ ſo much from in the centre of the animal œconomy, there is a part in the head, analogous to the brain, and there are ſenſes, of which the functions reſemble thoſe of other animals; and of theſe, ſuch as ſeem to be deprived of them, as oyſters, for example, ought to be conſidered as demi-animals, as beings which fill up an intermediate ſpace between the animal and the vegetable kingdoms.

The brain and the ſenſes form then a ſecond part eſſential to the animal œconomy; and as the heart is the center of the interior part of the animal, ſo is the brain the center of the cover, or the exterior part. In like manner as the heart and all the interior part communicate with the brain, and with all the exterior cover, by means of the blood veſſels; the brain communicates with the heart, and with all the interior part, by means of the nerves. The union appears to be intimate and reciprocal; and though of theſe two organs the functions are abſolutely different from each other when conſidered apart, yet, they can never be ſeparated without occaſioning the inſtant death of the animal.

The heart, and the whole interior part, act continually, without interruption, and, as it were, mechanically, and independently of any exterior cauſe; the ſenſes, on the contrary, and the whole exterior part, act only by alternate intervals, when affected by objects from without. Objects act upon the ſenſes, the ſenſes modify this action, and carry the impreſſion modified into the brain, where it becomes what we term *ſenſation*. In conſequence of this impreſſion, the brain acts on the nerves, and communicates to them the motion it has received; and this motion it is which produces progreſſion, and all the other exterior actions of the body, and of the members, of the animal. Whenever a cauſe acts upon a body, we know

know that the body alſo acts upon the cauſe, by its re-action in the preſent inſtance, the object acts upon the animal by the mode of the ſenſes, and the animal re-acts upon the object by its exterior movements. In general, action is the cauſe, and re-action is the effect.

It may, perhaps, be ſaid, that here the effect is not proportioned to the cauſe; that, in ſolid bodies which follow the laws of mechaniſm, the re-action, is always equal to the action; but that, in the animal body, it appears that the exterior movement, or the re-action, is incomparably greater than the action, and that, of conſequence, the progreſſive, and other exterior movements ought not to be conſidered as ſimple effects of the impreſſion of objects upon the ſenſes.

To this objection it is eaſily replied, that it, in certain caſes and in certain circumſtances, effects appear to us proportioned to their cauſes; there is in Nature a number infinitely more great of caſes, and of circumſtances, of which the effects bear no kind of proportion to their apparent cauſes; by a ſingle ſpark of fire a magazine of powder is ſet in a flame, and a citadel is blown up; by electricity a ſlight friction produces a violent ſhock which is felt in the ſame inſtant, at prodigious diſtances, and which by being divided or diffuſed, if ſo far from being weakened, that a thouſand perſons touching each other, or joining hands, are almoſt as much affected by it, as if the ſhock had been confined to each of them individually. It ought not; then, to be thought extraordinary, that a ſlight impreſſion upon the ſenſes ſhould be capable of producing in the animal body a violent re-action, and ſhould manifeſt itſelf by exterior movements.

The cauſes which we are qualified to aſcertain, and the quantity of whoſe effects we can, of conſequence, preciſely eſtimate, are leſs numerous than

thoſe whoſe qualities eſcape us, whoſe mode of action is unknown to us, and of whoſe proportional relation with their effects we are; for theſe very reaſons entirely ignorant. In order to aſcertain a cauſe, it is neceſſary that that cauſe ſhould be ſimple, that it ſhould be always the ſame, that its action ſhould be uniform, or which in effect is the ſame, that it ſhould be only variable according to ſome law with which we are exactly acquainted. Now in Nature, effects, for the moſt part, depend on a number of cauſes differently combined; on cauſes whoſe action varies, on cauſes whoſe degrees of activity ſeem to be determined by no rule, no eſtabliſhed law, and of which conſequently we can only form a conjectural eſtimate, in endeavouring to approximate the truth, by the means of probabilities.

I pretend not, then, to aſſert as a demonſtrated truth, that the progreſſive movement, and the other exterior movements of the animal are cauſed ſolely by the impreſſion of objects upon the ſenſes. As a thing likely, and, in my opinion, founded on juſt principles of analogy, I mention it entirely. I ſee, for example, that in Nature all organiſed beings which are deſtitute of ſenſe are likewiſe deſtitute of progreſſive motion; and that all thoſe which poſſeſs theſe qualities, poſſeſs alſo the active quality of moving their members, and of changing place. I ſee moreover that this action of objects upon the ſenſes frequently without the ſmalleſt interruption of the will, puts the animal inſtantly in motion; and that, when it is the will which determines the motion, the will itſelf is always excited by the ſenſation which reſults from the preſent impreſſion of objects upon the ſenſes, or from the recollection of ſome antecedent impreſſion.

Let us, to illuſtrate theſe obſervations, briefly analiſe the phyſical principles of our actions. When, through the medium of whatever ſenſe, an object

object ſtrikes us, when the ſenſation which it produces is agreeable, and when it creates a deſire, this deſire muſt have a relation to ſome of our qualities, and to ſome of our modes of enjoyment. The object we cannot deſire, but in order to ſee it, in order to taſte it, in order to hear it, in order to ſmell it, or in order to touch it. We deſire it merely that we may ſatisfy more fully the ſenſe with which we perceived it, or that we may ſatisfy ſome other ſenſe at the ſame time; in other words, that we may render the firſt ſenſation ſtill more agreeable, or that we may excite another ſenſation. This is a new manner of enjoying the object; for if, in the moment itſelf that we perceive it, we could enjoy it fully, and through all the ſenſes at once, we would have nothing to deſire. The ſource of deſire, then, is, our being badly ſituated with reſpect to the object we have perceived; our being either too far from it, or too near to it. This being the caſe, we naturally change our ſituation, becauſe at the ſame time that we perceive the object, we likewiſe perceive the diſtance, or the proximity which renders our ſituation incommodious, and which prevents us from obtaining a full enjoyment of it. From the impreſſion which the object produces upon our ſenſes, then, does the motion we make in conſequence of the deſire, and does the deſire itſelf, ſolely proceed.

An object which we have perceived by the eyes, and which we deſire to touch, if within our reach, we ſtretch forth our arms, in order to obtain, and if at a diſtance from us, we put ourſelves in motion, in order to approach. A man deeply immerſed in thought, if he is very hungry, and he obſerves a piece of bread before him, will he not ſeize it; will he not even carry it to his mouth, and eat it, without perceiving that he has done ſo? Theſe movements are a neceſſary conſequence of the firſt impreſſion

preſſion of objects, and would never fail to ſucceed this impreſſion, if other intervening impreſſions did not often oppoſe this natural effect, either by weakening, or by deſtroying the action of the firſt impreſſion.

An organiſed being void of ſenſe; for example, an oyſter, whoſe ſenſe of feeling is probably very imperfect, is a being, then, deprived, not only of progreſſive motion, but even of all ſentiment and intelligence; ſince either of theſe would produce deſire, and would be manifeſted by the exterior movement. That ſuch beings are abſolutely diveſted even of a ſenſe of their exiſtence, I will not aſſert; but at leaſt it may be ſaid that their ſenſe of it is in a high degree imperfect, ſince they have no perception of the exiſtence of other beings.

It is the action of objects upon the ſenſes, therefore, which creates deſire, and it is deſire which produces progreſſive motion. In order to render this truth ſtill more ſenſible, let us ſuppoſe a man, who, in the very inſtant that the will incites him to approach an object, finds himſelf ſuddenly deprived of the members neceſſary to this action. Take from him the legs, and he will endeavour to walk upon his knees; take from him the knees and thighs, and he will endeavour to walk upon his hands; take from him the hands and the arms, and he will crawl, he will employ the whole powers of his body, he will derive every poſſible aid from the flexibility of the vertebræ, in order to put himſelf in motion; reduce his body to a phyſical point, to a globular atom, and, provided the deſire ſtill ſubſiſts, he will exert his whole ſtrength in order to change his ſituation. The exterior and progreſſive movement depends not, then, upon the organization and figure of the body and members; ſince, whatever may be the exterior conformation of any being, that being can-

not fail to have the power to move itſelf, provided it has ſenſes, and a deſire to gratify them.

On this exterior organization, indeed, depends the facility, the quickneſs, the direction, the continuity, &c. of motion; but the cauſe, the principle, the action, the determination, originate ſolely from the deſire occaſioned by the impreſſion of objects upon the ſenſes. Let us ſuppoſe, for example, a man, who, though his exterior conformation remains ſtill the ſame, is bereaved, however ſucceſſively, of all his ſenſes; if deprived of ſight, he will not change his ſituation, in order to ſatisfy his eyes; if ſounds make no impreſſion upon him, he will not advance to hear; nor, if his olfactory powers are deſtroyed, will he make the ſmalleſt motion, in order to enjoy an agreeable odour, or to avoid a diſagreeable one. Thus it is alſo with the touch and the taſte: if theſe two ſenſes are no longer ſuſceptible of impreſſion, he will not act, in order to gratify them; he will remain perpetually at reſt; and though, by his exterior conformation, he may be perfectly of motion, and of action, he yet will be incapable of either.

The natural wants, as for example, that of receiving nouriſhment, are interior movements, of which the impreſſions create deſire, appetite, and even neceſſity. By theſe interior movements, then, exterior movements are produced in the animal; and provided he is not deprived of all the exterior ſenſes, provided he has a ſenſe relative to his wants, he will act in order to ſatisfy them. Want is not deſire; it differs from it, as the cauſe differs from the effect; nor can it produce it without the concurrence of the ſenſes. Every time that the animal perceives ſome object, relative to its wants, deſire or action begins, and action follows.

As exterior objects to exerciſe their action upon the ſenſes, it is neceſſary that the action ſhould produce

duce ſome effect; and this effect we ſhould readily conceive to be the movement of the animal, if on each occaſion that its ſenſes are ſtruck in the ſame manner, the ſame effect, the ſame movement always followed.

But how ſhall we comprehend that modification of the action of objects upon the animal, which creates appetite or loathing? How ſhall we conceive what it is that operates beyond the ſenſes, in the intervenient period between the action of objects, and the action of the animal; an operation in which, nevertheleſs, conſiſts the principle of the determination of motion, ſince it changes and modifies the action of the animal, and renders it ſometimes null notwithſtanding the impreſſion of objects?

This queſtion is the leſs eaſy to be reſolved, as, being by our nature different from animals, the ſoul has a ſhare in the greateſt part of our movements, if not in all of them without exception, and as to diſtinguiſh the effects of the action of this ſpiritual ſubſtance, from thoſe which are produced by the powers of our material being alone, is an object of very great difficulty, and of which we can form no judgment but by analogy, and by a compariſon of our actions with the natural operations of animals. But as man alone is poſſeſſed of this ſpiritual ſubſtance, and as it is by it alone that he thinks and reflects; as the animal, on the contrary, is a being altogether material, which neither thinks nor reflects, and which, nevertheleſs acts, and ſeems to determine, we cannot doubt but that the principle of the determination of motion is in the animals, an effect altogether mechanical, and abſolutely dependent upon its organiſation.

I conceive, then, that in the animal, the action of objects upon the ſenſes produced another action upon the brain, which I conſider as an interior and a general ſenſe, which receives every impreſſion that the exterior ſenſes tranſmit to it. This internal ſenſe is not only

only capable of being agitated by the action of the ſenſes, and of the exterior organs; but alſo of retaining for a length of time the agitation which this action produces; and in the continuity of the agitation conſiſts the impreſſion, which is more or leſs deep in proportion, as the agitation is more or leſs durable.

In the firſt place, then, the interior ſenſe differs from the exterior ſenſes, in the property which it has of receiving generally all impreſſions, of whatever nature they may be. By the exterior ſenſes, on the other hand they are received particularly, and merely as they relate to their conformation; the eye, for example, being no more agitated, or affected by ſound, than the ear is by light. In the ſecond place, this inferior ſenſe differs from the exterior ſenſes, by the duration of the agitation which is produced by the action of the exterior cauſes; but in every other reſpect they are of the ſame nature. The interior ſenſe of the animal (and its exterior ſenſes may may be included in the deſcription) is an organ an effect of machiniſm, a ſenſe wholly material. We have, like the animal, this material ſenſe; and we poſſeſs moreover a ſenſe of nature highly ſuperior and different, which reſides in the ſpiritual ſubſtance, and which animates and guides us.

The brain of the animal is, therefore, an internal ſenſe, which receives without diſtinction, all the impreſſions which the external ſenſes tranſmit to it; in other words, all the agitations which are produced by the action of objects. "Theſe agitations continue and ſubſiſt much longer in this internal ſenſe than in the external ſenſes; a truth which we will eaſily conceive, if we remark that even in the latter there is a very ſenſible difference in the duration of their agitations. The agitation which the light produces in the eye, than that which is produced in the ear by ſound; of which in order to obtain indubitable proofs, we have only to reflect on certain well-known phœnomena.

When

When we whirl with velocity a lighted coal, or when we ſet fire to a rocket, the firſt forms in our eyes a circle of fire, and the laſt a long track of flame. Theſe appearances are known to proceed from the continuance of the agitation which the light produces upon the viſual organ, and from our ſeeing at the ſame time both the firſt and the laſt image of the coal or rocket. Now there muſt be a ſenſible time between the firſt and the laſt impreſſion. Let us aſcertain this interval, and ſay, that it requires half a ſecond, or only a quarter of a ſecond, before the lighted coal can have deſcribed its circle, and returned to the ſame point of circumference. This being the caſe, the agitation occaſioned by the light laſts half a ſecond, or a quarter of a ſecond at leaſt. Of much ſhorter duration, however, is the agitation which is produced by ſound. We may hear diſtinctly, either the ſame ſound three or four times, or three or four ſucceſſive ſounds, in the ſpace of a quarter of a ſecond, and ſeven or eight in half a ſecond; the laſt impreſſion being diſtinct, ſeparate, and not confounded with the firſt. In the eye, on the other hand, the firſt and the laſt impreſſion ſeem to be without intermiſſion; and for this reaſon it is, that a ſeries of colours ſucceeding each other with as much rapidity as ſounds, a confuſion neceſſarily takes place, and we are by no means affected in a diſtinct manner as by a ſeries of ſounds.

On ſufficient grounds, then may we preſume, that the duration of the agitations is much longer in the interior ſenſe, than in the exterior ſenſes; ſince, even in ſome of the latter, the agitation laſts longer than in others, as we have already ſhewn with reſpect to the eye, whoſe agitations are more durable than thoſe of the ear. It is on this account, that the impreſſions which the former tranſmits to the interior ſenſe, are more ſtrong than thoſe tranſmitted by the latter; and that we repreſent to ourſelves the things

which

which we have ſeen much more forcibly than thoſe which we have heard. It is even found, that of all the ſenſes, the eye is that in which the agitations are moſt durable, and in which, of conſequence, though ſeemingly they are more explicit, the ſtrongeſt impreſſions are formed. This organ ſeems indeed to partake in a ſuperior degree of the interior organs; a fact, of which a proof might be adduced from the quantity of nerves belonging to it, which are almoſt as numerous as thoſe of the ſenſes of hearing, ſmelling, and taſting put together.

The eye may therefore be conſidered as a continuation of the interior ſenſe. It is indeed, as in a preceding page we obſerved, nothing more than one large nerve expanded a prolongation of the organ, in which reſides the interior ſenſe of the animal. That in its nature there ſhould be a greater affinity to this internal ſenſe, is not then ſurpriſing; and, in effect, not only are its agitations more durable, but its properties more eminent, than thoſe of the other ſenſes, and ſimilar to thoſe of the internal ſenſe.

The eye repreſents outwardly the inward impreſſions. Like the internal ſenſe, it is active, and expreſſes the deſire which the object that it was ſtruck with excited. All the other ſenſes, on the contrary are almoſt wholly paſſive: they are organs merely, which are formed for the reception of exterior impreſſions, but which, being incapable to retain them, are ſtill leſs ſo to reflect them outwardly. With reſpect to the eye, it reflects, becauſe it retains them; and it retains them becauſe the impreſſions it receives are durable, and not, like thoſe of the other ſenſes, produced and annihilated almoſt in the ſame inſtant.

When with violence however, and for a length of time, any ſenſe whatever is agitated, the agitation ſubſiſts much longer than the action of theſe exterior objects. If the eye is ſtruck with a light too

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ſtrong, if it is fixed too long upon one object, and if, at the ſame time, the colour of that object is rather dazzling, it receives an impreſſion ſo deep and ſo durable, that it afterwards applies the image of that object to every other object. If we look at the ſun an inſtant, for ſeveral minutes, for ſeveral hours, and ſometimes even for ſeveral days after, we ſhall ſee the diſk of the ſun upon every other object. When the ear has been agitated for a few hours ſucceſſively by the ſame muſical air, or by ſtrong ſounds, which may have attracted the attention, as thoſe, for example, of hautboys, or of bells, the agitation ſubſiſts, we continue to hear bells and hautboys, the impreſſion ſometimes laſts for ſeveral days, and is never effaced, but by degrees. In like manner, when the ſmell and the taſte have been affected by a very ſtrong odour, and by a very diſagreeably ſavour, this odour, and this ſavour we retain for a conſiderable time after; and in times when we exerciſe too much the touch upon the ſame object; when, for inſtance, we violently apply to any part of our body an extraneous ſubſtance; the impreſſion likewiſe ſubſiſts for ſome time, and we ſeem ſtill to touch, and be touched.

All the ſenſes poſſeſs then, the faculty of retaining in one degree or other, the impreſſions of exterior cauſes, while the eye poſſeſs it in a degree ſtill greater than any. The brain alſo, in which reſides the internal ſenſe of the animal eminently enjoys this property; and not only does it retain the impreſſions which it has received, but propagate the action of them, by communicating the agitations to the nerves. The organs of the exterior ſenſes, the brain which is the organ of the interior ſenſe, the ſpinal marrow, and the nerves, which are diffuſed over every part of the animal body, ought to be conſidered as forming one continuous ſubſtance, as an organic machine, in which the ſenſes are the parts act-

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ed upon by the exterior powers. The brain is the hypomoction, or the maſs of defence, and the nerves are the parts which the action of the powers puts in motion.

But what renders this machine ſo different from other machines is, that the hypomoction is not only capable of reſiſtance, and of re-action, but is itſelf active, becauſe it retains for a long time the agitation which it has received; and as this interior organ, the brain, and the membranes which ſurround it, has great capacity and ſenſibility, it may receive, at one time, a number of ſucceſſive agitations, and retain them in the order in which they were received, becauſe each impreſſion only agitates a part of the brain, and becauſe the ſucceſſive impreſſions agitate the ſame part differently, and may likewiſe agitate the neighbouring and contiguous parts.

Should we ſuppoſe an animal which had no brain, but which had an exterior of great ſenſibility and extenſion; an eye, for example, of which the retina, or tunicle, was as extenſive as that of the brain, and had, at the ſame time, like the brain, the property of retaining for a long ſpace, the impreſſions which it might receive; it is certain, that, with a ſenſe like this, the animal would ſee at one and the ſame time, not only the objects with which it might be then actually ſtruck, but alſo thoſe with which it might have been ſtruck before; becauſe, in this ſuppoſition, the agitations ſtill ſubſiſting, and the capacity of the retina being ſufficient for their reception in different parts, it would perceive equally, and at the ſame time, both the firſt and the laſt images: and ſeeing thus the paſt and the preſent with one glance, it would be determined mechanically to perform this on that action, in conſequence of the degree force, and of the greater or leſs number of agitation produced by the images which relate, or are contrary, to this determination. If the

number

number of images proper to create an appetite, ſurpaſſes that of images proper to create a diſguſt, or loathing, the animal will be neceſſarily determined to make a movement, in order to ſatisfy that appetite; and if the number, or the force, of the images of the former are equal to the number, or the force, of the images of the latter, the animal will remain undetermined, and in an equilibrium between theſe two equal powers; nor will he make any movement, either to obtain or to avoid. This, I ſay, he will do mechanically, and without the ſmalleſt intervention of memory; for as the animal ſees at the ſame time all the images, they, of conſequence, all act at the ſame time. Thoſe which have an affinity to appetite and deſire, unite with, and counteract, thoſe which have an affinity to antipathy and diſguſt; and it is by the preponderance, or rather by the exceſs, of the force, and of the number, of either, that the animal is neceſſarily determined to act in this or in that manner.

From what has been already advanced, it is evident, that in the animal, the interior ſenſe differs in nothing from the interior ſenſes but in the property which the former has of retaining the agitations, the impreſſions, which it has received; a property, by which alone all the actions of animals may be explained, and ſome idea obtained of what paſſes within them; a property, by which likewiſe may not only be demonſtrated the eſſential and infinite difference, which neceſſarily ſubſiſts between them and us, but may alſo be diſtinguiſhed in what reſpects they are actually ſimilar.

Though in animals, the ſenſes are exquiſite, yet, generally-ſpeaking, they are not all ſo perfect as in man; and it is to be obſerved, that, in the former, the excellences of the ſenſes do not follow the ſame order as in the latter. The ſenſe which has the ſtrongeſt affinity to thought, and to knowledge, is

the touch; and this ſenſe, as in treating of the ſenſes in general we have already evinced, is enjoyed by man in greater perfection than by animals. That which has the ſtrongeſt affinity to inſtinct, and to appetite, is the ſmell; a ſenſe, in the enjoyment of which man muſt acknowledge an infinite inferiority. In man, then, the tendency is greater to knowledge than to appetence, and in the animal it is greater to appetence than to knowledge. In the former, the firſt ſenſe in point of excellence, is the touch, and the laſt is the ſmell: in the latter, on the contrary, the ſmell is the firſt, and the touch is the laſt; and this difference correſponds with the nature of each. The ſenſe of ſeeing is at beſt uncertain, nor can it contribute to knowledge, but by the aid of the touch; and therefore the ſenſe of ſeeing is in itſelf more imperfect, or rather is leſs capable of acquiring perfection, in the animal than in man. The ear, though its conformation is, perhaps, as perfect in the former as in the latter, is, however, of much leſs uſe to the animal, from the want of ſpeech, which in man is an appendage to the ſenſe of hearing. It is alſo in man an organ of communication, an organ which renders hearing an active ſenſe; whereas, in the animal, hearing is a ſenſe almoſt entirely paſſive. Man, then, enjoys the ſenſes of feeling, of ſeeing, and of hearing more perfect, and the ſenſe of ſmelling more imperfect, than the animal; and as the taſte is an interior ſmell, as it has alſo a ſtronger relation to the appetite than any of the other ſenſes, there is a ſufficient probability to ſuppoſe, that the animal enjoys this ſenſe alſo more certain, and perhaps more exquiſite, than man. Of this circumſtance a proof might be adduced from the inſuperable repugnance which animals have to certain kinds of food, and from that natural appetite by which they chooſe, without being deceived, ſuch as are proper for them; while

man,

man, on the other hand, unleſs informed of the difference, will eat the fruit of one tree for the fruit of another, and will even devour hemlock for parſley.

The excellence of the ſenſes proceeds from nature, but art and habit may at the ſame time render them ſtill more perfect; and for this purpoſe they need only be exerciſed often, and for a continuance, upon the ſame objects.

A painter, accuſtomed to examine forms with attention, ſees, at the firſt glance, an infinite number of ſhades and differences which another perſon cannot diſtinguiſh but by the help of time, and which, perhaps, he can never diſtinguiſh. To a muſician, whoſe ear is continually habituated to harmony, a diſſonance gives the moſt lively ſenſation of pain. Of the latter, the ear is an inſtrument which a diſcordant ſound diſorders and untunes; of the former, the eye is a picture, in which the moſt minute ſhades are obſerved, in which the moſt delicate ſtrokes are delineated. In like manner are the ſenſes, and even is the appetite, of animals rendered more perfect: we teach birds to repeat words, and to imitate tunes; and we increaſe the ardour of a dog for the chace, by accuſtoming him to a certain reward.

But in the brute creation alone are the effects conſpicuous of this excellence of the ſenſes, and even of the perfection to which they may be brought. In proportion as theſe are acute and perfect, in proportion does the animal ſhow itſelf active and intelligent. Man, on the contrary, is not, becauſe he has greatly exerciſed his ear, or his eye, by any means more rational, or more ingenious. We do not find, that perſons whoſe ſenſes are obtuſe; perſons, for example, who ſee, hear, or ſmell, imperfectly, are of leſs intellectual capacity than others; an evident proof, that in man there is ſomething more than an internal animal ſenſe. This is nothing

more than a material organ which reſembles the organ of the interior ſenſes, and which only differs from them in poſſeſſing the property of preſerving the agitations which it receives. The ſoul of man, on the contrary, is a ſuperior ſenſe; it is a ſpiritual ſubſtance, entirely different in its eſſence, and in its action, from the nature of the exterior ſenſes.

From this circumſtance, however, we are not to deny, that there is in man an internal material ſenſe, which correſponds, as in the animal, with the external ſenſes. That this internal material ſenſe exiſts in man we may be ſufficiently aſſured from the conformity of their reſpective organs, and from the brain, which is in man as well as in the animal, and which in the former, proportionally to the ſize of the body, is even of a much greater extent. What I maintain is, that this ſenſe is infinitely ſubordinate to the other; that the ſpiritual ſubſtance governs it, and either deſtroys or creates its action; that, in a word, though it is a ſenſe which, in the animal, does every thing, in man, however, does nothing, but what the ſuperior ſenſe either does not prevent, or does not actually preſcribe. In the animal this ſenſe is the determinating principle of motion, and of all actions; of theſe it is, in man, only the means, or the ſecondary cauſe.

Let us endeavour to clear up this important point; let us ſee what this internal material ſenſe is capable of producing. When we ſhall have aſcertained and limited the ſphere of its activity, whatever may remain uncomprehended therein muſt neceſſarily depend upon the ſpiritual ſenſe; and the ſoul will be found to perform whatever this material ſenſe is incapable of performing. If we eſtabliſh preciſe limits between theſe two powers, we ſhall clearly perceive what belongs to each; we ſhall with eaſe diſtinguiſh every thing which the animals poſſeſs in common

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with us, and every thing which we poſſeſs ſuperior to them.

The internal material ſenſe receives promiſcuouſly all the impreſſions which each of the external ſenſes tranſmits to it. Theſe impreſſions proceed from the action of objects. They only paſs over the external ſenſes, and produce in them but a ſhort, and, as it were, an inſtantaneous agitation; they reſt, however, upon the internal ſenſe, and produce in the brain, which is the organ of them, durable and diſtinct agitations. Theſe are agreeable, or diſagreeable, in other words, are relative, or contrary, to the nature of the animal, and create in it appetite or diſguſt, inclination or repugnance, according to its preſent ſtate and diſpoſition. Let us take an animal in the inſtant of its birth, and we ſhall find, that, ſo ſoon as it begins to breathe, and to feel the want of nouriſhment, the ſmell, which is the ſenſe of appetite, receives the emanations, and the odour, of the milk which is contained in the teats of its mother. The agitation which this ſenſe undergoes, from the odoriferous particles, it communicates to the brain; and the brain acting in its turn upon the nerves, the animal makes motions, and opens its mouth, in order to obtain that ſuſtenance of which it feels the want. The ſenſe of appetite being leſs acute in man than in the animal, the infant at its birth feels, it is true, the neceſſity of receiving nouriſhment, and announces it by its cries; but it cannot obtain it of itſelf; it receives no information from the ſmell; by nothing can its motions be determined, in order to obtain this nouriſhment; and, by being carried to the nipple, it muſt be made to feel it, and to touch it with the mouth. The agitation thus produced in the ſenſes is then communicated to the brain; and this acting upon the nerves, the infant makes the movements neceſſary for receiving and ſucking in its nouriſhment. Solely by

by the ſmell, and by the taſte, that is to ſay, by the ſenſes of appetite, can the animal be informed of the preſence of its food, and of the place where it ought to ſearch for it; as its eyes are ſtill cloſed, and would, even if they were open, in no degree contribute toward the determination of motion. Viſion has a greater relation to knowledge than to appetite; and in man the eye is open from the moment of his birth, in moſt animals it is ſhut for ſeveral days. In theſe, on the contrary, the ſenſes of appetite are far more expanded, and more perfect; and this is another proof that, in man, the organs of appetite are inferior to thoſe of knowledge, that, in the animal, the organs of knowledge are inferior to thoſe of appetite.

The remark which has here been made with reſpect to the ſenſes of appetite, is alike applicable to the progreſſive movement, and to all the other exterior movements. A new-born infant can hardly move its members, and a long time muſt elapſe before it attains ſtrength ſufficient to change its place; in a very little time, on the contrary, does a young animal acquire theſe faculties. As, in the animal, they relate ſolely to the appetite; as this appetite is vehement, is quickly developed, and is the ſole determinative principle of motion; as, in man, on the contrary, the appetite is weak, is more ſlowly developed, and can have leſs influence than knowledge upon the determination of motion; man is neceſſarily, in this reſpect, more backward than the animal.

Every thing concurs, then, to prove, even in a phyſical ſenſe, that the animal is moved by appetite alone, and that man is governed by a ſuperior principle. If, with reſpect to this matter, doubts have ſtill ſubſiſted, it is from our imperfect conception of the manner in which appetite alone is capable of producing, in the animal, effects ſo much reſembling

thoſe

thoſe which knowledge produces among ourſelves; and from the difficulty we have to diſtinguiſh what we do in virtue of knowledge, from what we do by the mere force of appetite. Yet, in my opinion, it is not impoſſible to diſpel this uncertainty, and even to aſcertain the truth, by employing the principle which we have already eſtabliſhed. The internal material ſenſe, it has been obſerved, retains for a long time the agitations which it undergoes; it is a ſenſe which exiſts in the animal, a ſenſe, of which the brain is the organ, and by which all the impreſſions are received that each of the exterior ſenſes tranſmits to it. When, therefore, an exterior cauſe, an object, be it of what nature it may, exerciſes its action upon the exterior ſenſes, the action produces a durable agitation in the interior ſenſe, and the agitation communicates motion to the animal. This motion will be determinate, if the impreſſion proceeds from the ſenſes of appetite, ſeeing that the animal will advance, in order to attain, or draw back, in order to avoid, the object of this impreſſion, according as from that object it may have received pleaſure or diſguſt. This motion is liable to uncertainty, however, when it is produced by the ſenſes which have no relation to appetite; as, for example, when the eye and the ear are affected. An animal which ſees, or which hears, for the firſt time, is indeed agitated by light or by ſound. From this agitation, however, the motion will at firſt be uncertain, ſince in no degree has the impreſſion of light, or of ſound, any relation to appetite. It is not but by repeated acts, and after the animal has added, to the impreſſions from the ſenſes of ſeeing and hearing, thoſe from the ſmell, the taſte, and the touch, thatmotion becomes determinate, and that, by ſeeing an object, or by hearing a ſound, it advances in order to attain, or draws back in order to avoid, whatever is produced by theſe impreſſions, which,

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by experience, are thus rendered relative to its appetites.

In order to familiariſe this argument, let us examine an animal which has been tutored; a dog, for inſtance, which, though impelled by a violent appetite, ſeems, however, afraid to touch, and touches not in reality, what might ſatisfy that appetite, but which, at the ſame time, practiſes every motion, every geſture, in order to obtain it from the hand of its maſter. Does not this animal (according to the vulgar interpretation of its conduct) ſeem, while it thus deſires and fears, in reality to reaſon nearly as a man would do, who was inclined to ſeize on the property of another, and who, however powerfully tempted, is yet with-held by the dread of puniſhment? As it is in this manner that we ſeem to be affected, ſo indeed it is not unnatural to ſuppoſe, as numbers in reality do, that every thing paſſes within the animal in the ſame manner. The analogy, they tell us, is well founded, ſince the organiſation, and the conformation of the ſenſes, as well externally as internally, are not different in man from what they are in the animal. Ought we not, however, to perceive and acknowledge, that, in order to render this analogy in effect well founded, animals ſhould be capable of performing the ſame actions that we perform? Now the contrary is evident to demonſtration. Nothing do animals either invent or perfect; in every thing there is an uniformity, and therefore on nothing can they reflect. Already, then, may we deduct much of the force of this analogy, may we even doubt of its reality, and may we with propriety enquire, whether it is not by a principle different from ours that they are directed; and whether, without being under the neceſſity of allowing them the aid of reflection, the ſenſes they enjoy are not ſufficient to produce the actions they perform.

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Whatever relates to the appetite of animals ſtrongly agitates their interior ſenſe; and on the object of this appetite the dog would inſtantly ruſh, did not this very ſenſe retain the impreſſions of pain with which, this action had been formerly accompanied. By exterior impreſſions the animal has been modified. The prey, or the food, which is preſented to it, is not preſented to a dog ſimply, but to a dog which has been beaten; and as this dog has been chaſtiſed every time it obeyed this impulſe of appetite, the agitations of pain are renewed when thoſe of appetite are felt, both being conſtantly repeated at the ſame time. The animal, being thus impelled at once by two contrary powers, two powers deſtructive of each other, remains between them in an equilibrium; and, as the determinative cauſe of its motion is counter-balanced, it neither does nor can move, in order to attain the object of its appetite. As the agitations, then, of appetite and of repugnance, or, it may be ſo expreſſed, of pleaſure and of pain, ſubſiſt conſtantly together, in an oppoſition which deſtroys the effects of both, in the brain of the animal a third agitation takes place, which often accompanies the two former agitations. This agitation is occaſioned by the action of its maſter, from whoſe hand the animal has often received that morſel which is the object of its appetite; and as it is an agitation which is in no degree oppoſed or counter-balanced, it becomes the determinative cauſe of motion. Of conſequence, then, the dog is determined to move itſelf towards its maſter, and to remain in motion till its appetite is entirely ſatisfied.

In the ſame manner, and upon the ſame principles, may we explain, however complicated they may appear, all the actions of animals in general, without allowing them either thought or reflection; the internal ſenſe alone being ſufficient to produce

all their movements. One thing alone remains to be elucidated; namely, the nature of their ſenſations, which, from what we have now eſtabliſhed, muſt be widely different from ours. "Have not animals, then," it will be ſaid, "any knowledge? Do you deprive them of a conſciouſneſs of their exiſtence; do you deprive them of ſentiment? In pretending to explain all their actions upon mechanical principles, do you not in fact render them nothing more than mere machines, nothing more than mere inſenſible *autometa*?"

Already, if I have been rightly underſtood, muſt it have appeared, that, far from diveſting animals of every thing, I allow them every thing, thought and reflection excepted. Sentiment they have, and that even in a degree ſuperior to ourſelves. A conſciouſneſs they alſo have of their preſent, though not of their paſt exiſtence. They have ſenſations, but they have not the faculty of comparing them. In other words, they have not the power of producing ideas; ideas being nothing more than ſenſations which have been compared, or, better perhaps to expreſs it, aſſociations of ſenſations.

Each of theſe objects let us examine in particular. That animals have ſentiment, and in a degree even more exquiſite than ourſelves, I think we have already evinced, by what we have ſaid of the excellence of ſuch of their ſenſes as are relative to appetite; by the natural and inſuperable repugnance they have to ſome things, by the uniform and determinate inclination they have to others, and by the faculty they poſſeſs, with infinite ſuperioty to us, of diſtinguiſhing inſtantly, and without any uncertainty, what is fit for, from what is hurtful to them. Like ourſelves, then, animals are affected by pleaſure and by pain: they do not know good and evil, but they feel it; what is agreeable to them is good, what is diſagreeable to them is evil; and both are nothing more

more than relations, ſuitable, or contrary to their nature, to their organiſation. The pleaſure which tickling gives us, and the pain we experience from a hurt, is a pleaſure and a pain, to which, (as they depend abſolutely upon an external material cauſe, in other words, upon an action more or leſs ſtrong upon the nerves, which are the organs of ſentiment,) we are ſubjected in common with the animals. Whatever acts ſoftly upon theſe organs, whatever moves them delicately, is a cauſe of pleaſure, whatever ſhakes them violently, whatever agitates them ſtrongly, is a cauſe of pain. All the ſenſations, then, are ſources of pleaſure, while they are mild, moderate, and natural; but ſo ſoon as they become too ſtrong, they produce pain, which, in a phyſical ſenſe, is the extreme, rather than the oppoſite, of pleaſure.

In effect, a light too bright, a fire too hot, a noiſe too loud, a ſmell too ſtrong, viands coarſe or inſipid, a friction ſevere or violent, hurt us, or affect us diſagreeably; whereas a delicate colour, a moderate heat, a ſoft ſound, a gentle perfume, a fine ſavour, a light touch, pleaſe us, and often move us with delight. Every gentle action of the ſenſes, then, is a pleaſure, and every violent ſhock is a pain; and as the cauſes by which violent commotions and agitations may be occaſioned happen more rarely in Nature than thoſe which produce mild movements and moderate effects; as, moreover, animals, by the exerciſe of their ſenſes, acquire in a little time the habit, not only of avoiding every thing which is offenſive, or hurtful to them, but even of diſtinguiſhing, and of approaching to the, objects which are proper for them; ſo without doubt they enjoy more agreeable ſenſations than diſagreeable ones, and the amount of their pleaſure exceeds the amount of their pain.

If

If animal pleaſure is merely ſomething that gratifies the ſenſes, if, in phyſics, nothing can gratify theſe but what is agreeable to Nature, and if animal pain is nothing but what is experienced hurtful to the organs, and repugnant to Nature; if, in a word, pleaſure is phyſical good, and pain is phyſical evil, hardly a doubt will remain but that every being of ſenſe or feeling experiences, upon the whole, more pleaſure than pain: for, ſince whatever is ſuitable to its nature, whatever is capable of contributing to its preſervation, whatever ſupports its exiſtence, is pleaſure; ſo, on the contrary, whatever tends to its deſtruction, whatever is capable of diſordering its organiſation, whatever changes its natural ſtate, is pain. By pleaſure alone, then, can a being endowed with feeling continue to exiſt; and if the amount of agreeable ſenſations, in other words, of effects ſuitable to its nature, did not ſurpaſs that of painful ſenſations, or of effects repugnant to it, deprived of pleaſure it would at firſt languiſh, from the want of this phyſical good, and oppreſſed with pain, it would afterwards periſh from the ſuperfluity of this phyſical evil.

Of man, phyſical pleaſure and pain form the ſmalleſt part of the ſufferings, and of the enjoyments. His imagination, perpetually employed, ſeems perpetually to have for its object the increaſe of his miſery; to the ſoul it preſents nothing but vain phantoms, or exaggerated images, and the power of retaining, and of being occupied by them. More agitated by theſe illuſions, than by real objects, the ſoul loſes its faculty of judging, and even its dominion: the will, of which it has not longer the determination, becomes a burden to it; its extravagant deſires are ſorrows; and, at beſt, its proſpects are deluſive pleaſures, which vaniſh ſo ſoon as the tumult ſubſides, and as the ſoul, reſuming its place, is enabled to form a judgment of them.

In

In ſearching for pleaſure, then, we create to ourſelves pain; and always, when we deſire to be more happy, do we render ourſelves unhappy. Happineſs was given to us, and it is ſituated within us; unhappineſs is without, and we buſy ourſelves in the purſuit of it. Why are we not convinced, that the tranquil enjoyment of the ſoul is our real, our only good; that we cannot augment this enjoyment, without endangering the loſs of it; that the leſs we deſire, the more we poſſeſs; that, in fine, every thing for which we wiſh, beyond what Nature can give, is pain, and nothing is pleaſure but what ſhe of herſelf offers?

Now Nature has given, and ſtill every inſtant preſents to us, pleaſures without number; ſhe has provided for our wants, ſhe has fortified us againſt pain. In the phyſical world, there is infinitely more good than evil; and therefore it is not the reality, it is the chimera, which we have to fear: it is not pain of body, or diſeaſe, or death, which is terrible; it is the agitation of the ſoul, the conflict of the paſſions, the mental anxiety, which is ſo.

Animals have but one mode of enjoying pleaſure, which is the ſatisfying their appetite by the exerciſe of their ſenſations. We likewiſe enjoy this faculty, and have moreover another mode of enjoying pleaſure, which is found in the exerciſe of the mind, whoſe appetite is knowledge. This ſource of pleaſure would be the moſt copious, and the moſt pure, did not our paſſions oppoſe its current, diſturb it, and divert the ſoul from all contemplation. So ſoon as theſe obtain the aſcendancy, reaſon is ſilenced, or at leaſt is weakly heard, and with reluctance liſtened to; a diſguſt to truth enſues; the charm of illuſion increaſes; and error fortifies itſelf, drags us along, and plunges us in miſery. What miſery, indeed, can be greater than that of no longer ſeeing any thing as it is; of judging of every thing merely

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as it relates to our predominant paſſion; of acting ſolely by its direction; of appearing, in conſequence, unjuſt or ridiculous to others; and, when the hour of ſelf-examination comes, of being forced to deſpiſe ourſelves?

While this ſtate of illuſion and of darkneſs continues, we would change the very nature of our ſoul. This was given us for the purpoſes of knowledge, and we would employ it ſolely for thoſe of ſenſation. Could we utterly extinguiſh its light, far from regretting the loſs of it, with pleaſure would we embrace the lot of madmen. As we no longer enjoy reaſon but during intervals, and as theſe intervals are troubleſome to us, and ſpent in ſecret reproaches, we would willingly ſuppreſs them; and thus, proceeding from one illuſion to another, we at length loſe all knowledge, all remembrance of ourſelves.

A paſſion without intervals is madneſs; and to the ſoul a ſtate of madneſs is a ſtate of death. Violent paſſions with intervals are fits of folly; a malady of the ſoul, which is the more dangerous the more it is long in its duration, and frequent in its repetition.

It is during theſe intervals that wiſdom, though not happineſs, is predominant; for then, ſenſible of all the paſt diſorders of our ſoul, we blame our paſſions, we condemn our actions. The generality of thoſe who call themſelves unhappy are men of violent paſſions, that is to ſay, madmen, in whom there remain a few intervals of reaſon, during which they know their folly, and, of conſequence feel their unhappineſs; and as in exalted ſtations there are more falſe deſires, more vain purſuits, more unruly paſſions, more abuſes of the ſoul, than in inferior ſtations, the great are, beyond a doubt, of all men the leaſt happy.

But let us turn our eyes from theſe gloomy objects, from theſe humiliating truths, and let us take a view

of

of the man of wiſdom, the man, who alone indeed is worthy of our notice. Contented with his ſituation, he who is entitled to this character wiſhes not to be, but as he has always been, not to live, but as he has always lived; happy within himſelf, he ſtands in little need of others, nor can ever be a burden to them; continually occupied in exerciſing the faculties of his ſoul, he perfects his underſtanding, he cultivates his mind, he acquires new knowledge, and, on all occaſions, he ſatisfies himſelf without remorſe, and without diſguſt; in a word, by enjoying himſelf, he enjoys the whole univerſe.

A man like this, is of all beings in Nature undoubtedly the happieſt. To the pleaſures of the body, which he enjoys in common with the animals, he adds thoſe of the mind, which he enjoys excluſively. He has two methods of being happy, which aid and fortify each other; and if by indiſpoſition, or by any other accident, he is ſubjected to pain, his ſufferings are not ſo great as thoſe of another perſon: the ſtrength of his mind ſupports him, reaſon conſoles him, and even in ſuffering, he has the ſatisfaction to feel that he is enabled to ſuffer.

The health of man is more precarious than that of any animal; he is not only indiſpoſed more frequently, but for a greater length of time, and dies at any age. Animals, on the contrary, travel through life with an even and a ſteady pace. Of this difference, as it relates to man, there ſeem to me to be two cauſes, which, though widely diſtinct from each other, may both, however, contribute to the ſame effect. The firſt cauſe is, the unruline's of our internal material ſenſe; the paſſions, and the miſeries which accompany them, having an influence upon the health, and diſordering the principles which animate us; and, were we to obſerve mankind, we ſhould find, that almoſt all lead a life of timidity, or of contention, and that of the greateſt

greateſt part the days are ſhortened by chagrin. The ſecond is, the imperfection of thoſe of our ſenſes which have an affinity with the appetite. Animals have a more lively perception of what is ſuitable to their nature; they are not liable to deception in the choice of their food; they are not guilty of exceſs in their pleaſures; and, guided ſolely by a ſenſe of their preſent wants, they ſatisfy theſe, without attempting to create new ones. As for us, independently of our propenſity to exceſs in every thing, independently of that kind of fury with which we endeavour to deſtroy ourſelves, by endeavouring to force Nature, we hardly know what is proper for, or what is hurtful to us; we do not rightly diſtinguiſh the effects of this or that nouriſhment; we diſdain ſimple food, and prefer to it artificial diſhes; and this, becauſe we have depraved our taſte, and becauſe, from being a ſenſe of pleaſure, we have rendered it an organ of debauchery, which is never gratified but when it is irritated.

It is not ſurpriſing, then, that we ſhould be more ſubject than the animals to infirmities; ſince we do not feel with as much truth as them what is good or bad for us, what may contribute to preſerve or to deſtroy health, our experience being in this reſpect leſs certain than their perception; and ſince we, moreover, abuſe infinitely more than them, the very ſenſes of the appetite, which they enjoy in ſuch ſuperior excellence, theſe being, to them, means that contribute to their preſervation and health, and being to us, by our own practices, cauſes of diſeaſe, and of deſtruction. By intemperance alone more men ſicken and die, than by all the ſcourges of human nature united.

From all theſe reflections it follows, and we cannot help acknowledging, that animals have a more certain, as well as a more exquiſite ſentiment, than we have; for, though in oppoſition it might even be urged,

urged, that there are ſome animals which we poiſon with eaſe; that there are others which poiſon themſelves, and that, of conſequence, ſuch animals diſtinguiſh no better than ourſelves what is repugnant to their nature; ſtill, however, it might be replied, that they do not take the poiſon but with the bait, by which it is concealed, or with the food, by which it is ſurrounded; that, beſides, it is only when they are denied a choice, when they are forced by hunger, and when want becomes neceſſity, that they, in fact, devour whatever they meet with, or whatever is preſented to them; that it is even obſerved, that the greateſt part allow themſelves to conſume away with inanition, and to die of actual hunger, rather than make uſe of certain proviſions, to which their nature is abhorrent. In ſuch perfection do ſome animals enjoy the ſenſe of ſmelling, that they have a more diſtinct and extenſive perception of things by the olfactory, than by the viſual powers; and not only do they ſmell from afar bodies actually preſent, but even the emanations, and the traces, of thoſe bodies, long after they have been gone. A ſenſe like this, is an organ of univerſal ſenſation. It is an eye which ſees objects, not only where they are, but even where they have been; it is an organ of taſte, by which the animal enjoys the ſavour as well of what it has in its power to touch and ſeize, as of what is remote, and beyond its reach. It is the ſenſe, by which it obtains the moſt quick, the moſt frequent, and the moſt certain in-formation; by which it diſtinguiſhes what is ſuitable, or repugnant to its nature; by which, in fine, it perceives, feels, and chooſes, what is proper for the gratification of its appetite.

In greater perfection than us, then, do animals enjoy the ſenſes which relate to appetite; and though of their preſent exiſtence they have a conſciouſneſs, of their paſt exiſtence, however, they have none.

This ſecond propoſition, like the firſt, is worthy of our conſideration; and of its truth let us now endeavour to eſtabliſh a proof.

The conſciouſneſs of his exiſtence, that internal ſentiment which conſtitutes *ſelf*, is compoſed, in man, of the ſenſation of his preſent, and of the remembrance of his paſt exiſtence. This remembrance is a ſenſation altogether as preſent as the firſt; and it ſometimes occupies us more ſtrongly, and affects us more powerfully, than the ſenſations we actually and immediately experience. Now, as theſe two kinds of ſenſation are different from each other, and as our ſoul poſſeſſes the faculty of comparing them, and of forming ideas from them, our conſciouſneſs of exiſtence is the more certain, and the more extenſive, as we more frequently and more copiouſly repreſent to ourſelves paſt things and occurences, and as, by our reflections, we farther compare and combine them with each other, and with thoſe paſt things and occurences. Every man retains within himſelf a certain number of ſenſations, correſpondent with the different exiſtences; in other words, with the different ſtates, through which he has paſſed; and theſe ſenſations, by the compariſon which our ſoul has formed between them, at length becomes a ſucceſſion, and is formed into a ſeries, of ideas. In this compariſon of ſenſations conſiſts the idea of time; and indeed all other ideas, as has already been obſerved, are nothing more than what reſult from the compariſon of ſenſations. But this ſeries of ideas, this chain of exiſtences, is often preſented to us in an order very different from that in which our ſenſations reached us; and in this it is, that the difference principally conſiſts in the genius and diſpoſition of mankind.

Of two men, for example, whom we ſhall ſuppoſe ſimilarly organiſed, and to have been educated together, and in the ſame manner, though both may have received their ſenſations in the ſame order, yet one will

will think very differently from the other; for, as the temper of their ſouls is different, and as each of theſe ſouls has compared and combined thoſe ſimilar ſenſations, in a manner peculiar to itſelf, ſo the general reſult of ſuch compariſons, in other words, the ideas acquired, will be alſo different.

Some men there are, the activity of whoſe ſoul is ſuch, that they never receive two ſenſations without comparing them, and without, of conſequence, forming an idea from them. Theſe are, of all mankind, the moſt ingenious, and, circumſtances concurring, will always diſtinguiſh themſelves, let their ſituation in life be what it may. Other men there are, and in a greater number, whoſe ſoul, leſs active, allows all ſenſations which have not a certain degree of force, to eſcape, and who only compare thoſe by which they are ſtrongly agitated. In points of ingenuity theſe yield to the former; and always in a degree more or leſs ſo, as their ſoul is more or leſs employed in comparing ſenſations, and in forming ideas from them. Others ſtill there are, and they form the multitude, in whom there is ſo little activity of ſoul, ſo little propenſity to think, that they compare and combine nothing; nothing at leaſt at the firſt glance. Senſations of force, ſenſations repeated a thouſand and a thouſand times, are required, before their ſoul can compare one of them, and form an idea from it. Such men are more or leſs ſtupid; nor do they ſeem to differ from animals, but by the ſmall number of ideas, which their ſoul has thus with ſo much difficulty produced.

The conſciouſneſs of our exiſtence being compoſed, then, not only of our actual ſenſations, but even of the train of ideas, which gave riſe to the compariſon of our ſenſations, and of our paſt exiſtences, it is evident, that the more we have of ideas, the more we are certain of our exiſtence; that the more we have of intellectual capacity, the more we exiſt;

iſt; that, in fine, it is by the power our ſoul has of reflecting, and by that power alone, that we are certain of our paſt exiſtences, and view our future ones; the idea of futurity being nothing more than a compariſon of the preſent with the paſt inverted, ſince to the mind, conſidered in this light, the preſent is paſt, and the future is preſent.

As this power of reflection has been denied to animals, it is certain that they cannot form ideas, and that, of conſequence, their conſciouſneſs of exiſtence is leſs ſure, and leſs extenſive, than ours. Having no idea of time, no knowledge of the paſt, no conception of the future, their conſciouſneſs of exiſtence is ſimple, depends ſolely on the ſenſations by which they are actually affected, and conſiſts in the internal ſentiment which theſe ſenſations produce.

May we not conceive what this conſciouſneſs of exiſtence is in animals, by reflecting on the ſtate in which we are ourſelves, when ſtrongly occupied with ſome object, or when violently agitated by ſome paſſion, which baniſhes from us every reflection upon *ſelf?* Of this ſtate we familiarly expreſs the idea by ſaying, this or that man is *beſide himſelf*; and people are in reality *beſide themſelves*, when they are no longer occupied but with the ſenſations actually preſent to them, eſpecially if thoſe ſenſations are ſo lively, and ſo rapid, as to allow the ſoul little or no time for the conſideration of them. When thus ſituated, we feel ourſelves, we even feel pleaſure and pain in all their varieties; and therefore, though ſeemingly without the participation of the ſoul, we have a ſenſe, a conſciouſneſs, of our exiſtence. This ſtate, to which we are occaſionally expoſed, is the habitual ſtate of animals; deprived of ideas, and provided with ſenſations, they do not *know* that they exiſt, but they *feel* that they do.

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In order to render more ſenſible the difference here eſtabliſhed between ſenſations and ideas, and in order, at the ſame time, to give a demonſtrative proof, that animals, though they have ſenſations, are yet deſtitute of ideas, let us conſider minutely their faculties and ours, and compare their operations with our actions. Like us they have ſenſes, and conſequently they receive impreſſions from exterior objects; like us alſo they have an interior ſenſe, an organ which retains the agitations occaſioned by thoſe impreſſions, and conſequently they have ſenſations, which, like ours, are renewable, and are more or leſs ſtrong, more or leſs durable. But they have not, as we have, either ingenuity, or underſtanding, or memory; becauſe they are denied the power of comparing their ſenſations, and becauſe theſe three faculties of the ſoul depend on this power.

"Have animals no memory?" will it be replied, "The direct contrary ſeems demonſtrably evident. After a conſiderable abſence, do they not recogniſe the perſons with whom they had lived, the places where they had reſided, and the roads which they had frequented? Do they not recollect the puniſhments, the careſſes, the leſſons, they had received? Deprive them as you will of ingenuity, and of underſtanding, every thing, however, ſeems ſtill to evince, that they have a memory active, extenſive, and perhaps more faithful than our own."—However perſuaſive theſe appearances may be deemed, and however ſtrong may be the prejudice created by them, I nevertheleſs preſume I can demonſtrate, that they deceive us, that animals have no knowledge of the paſt, no idea of time, and, of conſequence, that they have no memory.

With us, memory flows from the power of reflection; for the remembrance which we have of things paſt ſuppoſes, not only the duration of the agitations

agitations of our internal material ſenſe, in other words, the renovation of our former ſenſations, but alſo the compariſon which our ſoul has made of thoſe ſenſations, or, which is in effect the ſame thing, the ideas which it has formed from them. If memory conſiſted merely in the renovation of paſt ſenſations, thoſe ſenſations would be repreſented to our internal ſenſe, without leaving any determined impreſſion; they would preſent themſelves without any order, without any mutual connection, as they actually do preſent themſelves in a ſtate of intoxication, or in certain dreams, when they are ſo incongruous, and ſo incoherent, that we immediately loſe all recollection of them. Of ſuch things only as have a relation to other things, by which they were preceded or followed, do we retain a remembrance; and every ſolitary ſenſation, every ſenſation which is unconnected with other ſenſations, however powerful it may be, paſſes away, without leaving the ſmalleſt trace in our mind. Now it is the ſoul which eſtabliſhes theſe relations between things, by the compariſon which it makes of one thing with another, and which forms the connection of our ſenſations by a continued thread of ideas. As memory conſiſts, then, in a ſucceſſion of ideas, ſo it neceſſarily ſuppoſes the power by which ideas are produced.

But in order to leave, if poſſible, no doubt with reſpect to this important point, let us enquire into the nature of the recollection which our ſenſations leave with us, when they are unaccompanied with ideas. Pain and pleaſure are pure ſenſations, and the ſtrongeſt of any; yet, when we endeavour to recollect what we felt in the periods, during which we were moſt powerfully affected either with pleaſure or pain, we do it feebly, and with confuſion. All we remember is, that we were pleaſed or hurt; but this remembrance is not diſtinct; we cannot

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repreſent to ourſelves either the kind, or the degree, or the duration, of thoſe ſenſations, by which, nevertheleſs, we had been ſo violently agitated; and the leſs we are capable of repreſenting them, the leſs, from their infrequency, we have had occaſion to experience them. A pain, for example, which we may never have experienced but once, which may only have laſted a few moments, and which may have been different from the pains which we habitually experience, muſt neceſſarily be forgotten, however violent it may have been; and though we may recollect, that, on a particular occaſion, we felt great pain, though we may have a diſtinct recollection of the circumſtances which accompanied it, and of the period at which it happened, yet feeble and imperfect is our reminiſcence of the ſenſation itſelf.

Why is almoſt every thing forgotten that paſſed during our infancy? And why have old men a more diſtinct remembrance of what happened to them in manhood, than of what happened to them in their more advanced years? Can there be a ſtronger proof, that the ſenſations are not of themſelves ſufficient to produce memory, and that it in reality exiſts ſolely in the train of ideas which our ſouls may derive from thoſe ſenſations? In infancy, the ſenſations are as lively and as rapid as in manhood, if not more ſo; and yet they leave few or no traces, becauſe at this æra the power of reflection, by which alone ideas can be formed, is in a ſtate of almoſt total inactivity, and becauſe in the moments in which it does act, it only compares the ſuperficies of things, it only combines little things for a little time. In manhood, when reaſon is completely developed, becauſe the power of reflection is in full exerciſe, we derive from our ſenſations every poſſible advantage, and we form to ourſelves many orders of ideas, and many chains of thought, whereof each

each forms a durable impreſſion, on which we ſo often revolve, that it becomes profound and indelible; inſomuch, that a number of years after, when old age comes on, thoſe very ideas preſent themſelves to us with more force, than thoſe we derive immediately from our preſent ſenſations, becauſe at that period thoſe ſenſations are feeble, ſlow, dull, and becauſe the ſoul itſelf partakes of the languor of the body. In infancy, the time preſent is every thing; in manhood, we equally enjoy the paſt, the preſent, and the future; in old age, we have little ſenſe of the preſent, we turn our eyes from the future, and our only exiſtence is in the paſt. Do not theſe differences depend entirely on the arrangement of our ſenſations by the ſoul? And do they not relate to the greater or leſs facility with which, in theſe different ages, we form, acquire, and retain ideas? Of the infant that prattles, and of the old man that doats, the reaſon is alike imperfect, becauſe they are both alike void of ideas: the former has not yet begun, and the latter has already ceaſed, to form them.

An idiot, whoſe corporeal ſenſes and organs appear to us ſound, and properly arranged, has, like us, ſenſations of all kinds; he will alſo have them in the ſame order, if he lives in ſociety, and if he is obliged to do as other men do. As theſe ſenſations, however, do not create in him ideas, as there is no correſpondence between his ſoul and his body, and as he is incapable of reflection, ſo he is neceſſarily deſtitute of memory, and of the knowledge of himſelf. In nothing does ſuch a man differ from an animal, as to the exterior faculties; for though he has a ſoul, and though, in conſequence, he poſſeſſes within him the principle of reaſon, yet, as this principle remains in a ſtate of inaction, and as it receives nothing from the corporeal organs, with which it has not the ſmalleſt correſpondence, it can therefore

therefore have no influence upon his actions; what are like thoſe of an animal ſolely determined by its its ſenſations, and by a ſentiment of its preſent exiſtence, and of its preſent wants. Thus the ideot and the animal are beings, whoſe operations are in every reſpect the ſame; becauſe the one has no ſoul, and the other has a ſoul, but does not make uſe of it. As they are both deſtitute of the power of reflection, ſo they are both of conſequence deſtitute of underſtanding, and of memory.

Still, however, will it be ſaid to me in reply, "Do not the ideot and the animal often act as if they were determined by the knowledge of things paſt? Do they not diſtinguiſh the perſons with whom they have lived, the places where they have reſided, and perform many other actions, which neceſſarily ſuppoſe memory? And does not all this even prove, that memory does not proceed from the power of reflection?

If any attention has been given to what I have juſt ſaid, it muſt already have been perceived, that I diſtinguiſh two kinds of memory, infinitely different from each other in their cauſe, and yet ſomewhat ſimilar in their effects. The one conſiſts in the traces of our ideas; and the other, which I would rather term rominiſcence than memory, is nothing more than the renovation of our ſenſations, or rather of the agitations by which they were occaſioned. The former iſſues from the ſoul, and, as I have already ſhewn, is much more perfect in man than the latter; which, on the contrary, is produced merely by the renovation of the agitations of the internal ſenſe, and is the only memory which can be attributed to the animal, or to the ideot. Their preceding ſenſations are renewed by their preſent ones, with all the circumſtances which accompanied them; the preſent and the principal image calls forth the former, and the acceſſory images; they feel as they

have felt, and therefore they act as they have acted; they behold together the preſent and the paſt, but without diſtinguiſhing them, without comparing them, and conſequently without knowing them.

Here a ſecond objection, though indeed it is nothing more than a conſequence of the firſt one, will no doubt be ſtarted; and, as a another proof of the exiſtence of memory in animals, I ſhall be told of their dreams. It is certain, that animals do repreſent to themſelves, while aſleep, the things with which they have been occupied, while awake. Dogs often bark when they are aſleep; and though this barking is feeble and hollow, yet it is eaſy to diſtinguiſh in it the cry of the chaſe, accents of rage, ſounds of deſire, of murmur, &c. It is not to be doubted, then, but that they have a very lively, and a very active, recollection of things paſt; a recollection, different, too, from that of which we have now been ſpeaking, ſince it is renewed independant of any exterior cauſe, which can poſſibly have a relation to it.

In order to clear up this difficulty, and to give a ſatisfactory anſwer to it, it is neceſſary to examine the nature of our dreams, and to enquire whether they proceed from our ſoul, or whether they depend entirely on our internal material ſenſe. Could we prove that in the latter ſolely they reſide, not only would it be an anſwer to the objection, but even an additional demonſtration, that, in animals, there is neither underſtanding nor memory.

Idiots, whoſe ſoul is without action, dream like other men; and therefore, as in idiots the ſoul produces nothing, ſome dreams are produced independently of the ſoul, but alſo, in my opinion, highly probable, that all dreams are independent of it. Let me but requeſt of any perſon to reflect upon his dreams, and to endeavour to diſcover, why the circumſtances are ſo unconnected, and the events are

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ſo extravagant. To me it appears, that it is principally becauſe they turn ſolely upon ſenſations, and by no means upon ideas. With the idea of time, for example, they have not the ſmalleſt affinity. We repreſent to ourſelves perſons whom we never ſaw, and even perſons who have been dead for many years: theſe we ſee before us alive, and as they formerly were when living; but we indifferently connect them with things, and perſons of the preſent, or of a different period. Thus it is alſo with the idea of place. The perſons and things we repreſent to ourſelves we either do not ſee where they were; we ſee them in other places, in places, two, where they could not poſſibly be found. Did the ſoul act, a ſingle inſtant would be ſufficient to give order to this train of incongruity, to this choice of ſenſations. Uſually, however, it does not act; it allows the repreſentations to ſucceed each other in diſorder; and though each object preſents itſelf in lively colours, the ſuggeſtion is however, often confuſed, and always chymerical. If it happens that the ſoul is rather rouſed by the enormity of ſuch extravagances, or ſolely by the force of theſe ſenſations, it will inſtantly in the midſt of this darkneſs, produce a ſpark of light, and create, in the very boſom of chimera, a real idea. We will even dream, that all this is nothing more than a dream. I ought rather to ſay, we will think ſo; for though this action is but a ſmall ſign of the ſoul, it is yet neither a ſenſation nor a dream; it is a thought, a reflection, but, being too weak to diſpel the illuſion, it mixes with it, forms a part of it, and prevents not the repreſentations from ſucceeding each other; in ſo much, that, on awaking, we imagine we had dreamed the very things we had thought.

In dreams, we ſee much, we hear little, we reaſon none; and, powerfully agitated by our ſenſations,

tions, images follow each other, without the leaſt intervention of the ſoul, either to compare, or to reconcile them. As we have ſenſations, then, but no ideas, the latter being nothing more than compariſons of the former, ſo dreams muſt reſide ſolely in the internal material ſenſe; and as the ſoul does not produce them, ſo, in like manner, they muſt form a part of that animal recollection, that kind of material reminiſcence, of which we have already treated. Memory, on the contrary, cannot exiſt, without the idea of time, without a compariſon of ideas paſt with ideas preſent, and, as theſe extend not to dreams, it ſeems to be a truth demonſtrable, that they can neither be a conſequence, nor an effect, nor a proof of memory. But though it ſhould be ſtill maintained that to ſome dreams, ideas certainly belong, or at leaſt are not ſo abſolutely excluded from them as we pretend; and though, as a proof of it, people who walk, who ſpeak, and who converſe connectedly, while aſleep, might be quoted, ſtill, nevertheleſs, my argument would be proved, that, by the renovation of ſenſations, ſenſations may be produced; for, in conſequence thereof, the dreams of animals muſt be merely of this ſpecies, and ſuch dreams, far from ſuppoſing memory, indicate, on the contrary, nothing but a material reminiſcence.

By no means, however, am I inclined to believe, that perſons who walk, and thus converſe, while aſleep, are in reality occupied with ideas. In all ſuch actions, the ſoul ſeems to have no concern. Sleep-walkers go, come, act, without reflection, without knowledge of their ſituation, of the danger, of the inconveniencies, with which they are ſurrounded; alone are their animal faculties exerciſed, and even of theſe ſome remain unemployed; and, while in this ſtate, a ſleep-walker is of courſe more ſtupid than an idiot. With reſpect to perſons who ſpeak while aſleep, I do not find they ſay

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any thing new. An anſwer to certain trivial and common queſtions, a repitition of a few familiar expreſſions, may be produced, independently of the principle of knowledge, and of thought, and are far from proving the action of the ſoul. Why ſhould we not ſpeak without thought, when aſleep, ſince every man, by examining himſelf, when moſt awake, muſt perceive that, under the influence of the paſſions eſpecially, he utters numberleſs things without reflection.

As to the occaſional cauſe of dreams, by which former ſenſations are renewed without being excited by preſent objects, or by actual ſenſations, it is to be obſerved, that we never dream when our ſleep is ſound: every thing is then in a ſtate of inaction, and of repoſe, and we ſleep both outwardly and inwardly. The internal ſenſe, however, falls aſleep the laſt, and awakes the firſt, becauſe it is more lively, more active, and more eaſily agitated, than the external ſenſes. Then it is that our ſleep is leſs perfect, and leſs ſound; that we experience illuſive dreams; that our preceding ſenſations, thoſe eſpecially on which we have not reflected, are renewed. As the internal ſenſe cannot be occupied by any actual ſenſations, becauſe of the inaction of the external ſenſes, it acts and exerciſes itſelf upon its paſt ſenſations. Of theſe, the moſt ſtrong are thoſe which it ſeizes the moſt often; the more they are ſtrong, the more the ſituations are extravagant; and for this reaſon it is, that almoſt all dreams either terrify or charm us.

In order that the internal material ſenſe may act of its own proper motion, it is not even neceſſary that theexterior ſenſes ſhould be abſolutely in a ſtate of repoſe: it is ſufficient if they are without exerciſe. Accuſtomed as we are regularly to reſign ourſelves to an anticipated repoſe, we do not eaſily fall aſleep: the body, and the members, ſoftly extended, are without

out motion; the eyes doubly veiled by the eye-lids and by the darkneſs, cannot exerciſe themſelves; the tranquility of the place, and the ſilence of the night, render the ear uſeleſs; alike inactive are the other ſenſes; every thing is at reſt, though nothing is yet lulled to ſleep. In this condition, when we are not occupied with ideas, and when the ſoul itſelf is in a ſtate of inactivity, the internal material ſenſe aſſumes the ſway, and is the only power that acts. Then is the time for chimerical images, for fluttering ſhadows. We are awake, and yet we experience the effects of ſleep. If we are in full health, the images are agreeable, the illuſions are charming; but, if the body is in the ſmalleſt degree diſordered or oppreſſed, then we ſee grim figures, hideous phantoms, which ſeem to addreſs themſelves to us, and to ſucceed each other in a manner not more whimſical than rapid. It is a magic lanthern, a ſcene of chimeras, which fill the brain, then empty for their reception, with every different ſenſation. Of this ſcene, the objects are lively, numerous, and diſagreeable, in proportion as the other animal faculties are injured, as the nerves are delicate, and as the body is weak; becauſe, as the agitations occaſioned by the real ſenſations are, in this feeble or diſtempered ſtate, much ſtronger, and more diſagreeable, than in a ſtate of health, ſo the repreſentations of the ſenſations, by which the renovation of thoſe agitations are produced, muſt likewiſe be more lively and more agreeable.

Before we diſmiſs the ſubject, it is to be obſerved, that we remember our dreams, from the ſame cauſe that we remember ſenſations we have lately experienced; and the only difference which ſubſiſts here between the animals and us is, that we diſtinguiſh perfectly what belongs to our dreams, from what belongs to our real ideas or ſenſations; and this is a compariſon, an operation of the memory, to which the

the idea of time extends. Animals, on the contrary, who are deprived of memory, and of this power of compariſon, cannot diſtinguiſh their dreams from their real ſenſations; and it may be ſaid, that what they have dreamed, has in reality happened to them.

Already, I preſume, in treating of the nature of man * have I demonſtratively ſhown, that animals enjoy not the power of reflection. Now the underſtanding is not only a faculty of this power, but even the exerciſe, the reſult, of it, the faculty by which it is manifeſted. In the underſtanding, we have only to diſtinguiſh two different operations, of which the one ſerves as a baſis to the other, and neceſſarily precedes it. This firſt action of the power of reflection is, to compare ſenſations, and form ideas from them; the ſecond is, to compare ideas themſelves, and form arguments, or concluſions, from them. By the former of theſe operations we acquire particular ideas, which are ſufficient for the knowledge of all ſenſible things; by the latter, we attain general ideas, which are neceſſary for the comprehenſion of abſtracted things. Neither of theſe faculties do the animals poſſeſs becauſe they are void of underſtanding; and to the firſt of theſe operations does the underſtanding of the bulk of men ſeem by its effects to be limited.

Were all men, for example, equally capable of comparing ideas, of rendering them general, and of forming new combinations of them, all men would manifeſt their genius by new productions, always different from, and ſometimes more perfect than thoſe of other men; all would enjoy the right of invention, or at leaſt the talents for improvement. This, however, is far from being the caſe. Reduced to a ſervile imitation, the generality of men

* See chap. I. of the preſent volume.

do nothing but what they ſee others do; they only think by memory, and in the ſame ſtyle as other men have thought. Forms, methods, and trades, occupy the whole capacity of their underſtanding, and exempt them from that degree of reflection which is neceſſary for the purpoſes of creation or invention.

The imagination is likewiſe a faculty of the ſoul. If by the term *imagination* we underſtand the power we have of comparing images with ideas; of giving colours to our thoughts; of repreſenting and agrandiſing our ſenſations; of perceiving diſtinctly all the remote affinities of the objects we conſider; it is even, of all the faculties of our ſoul, the moſt brilliant and the moſt active; a faculty, of which the animals are ſtill more deſtitute than they are of underſtanding and of memory. But there is another imagination, another principle, which depends ſolely upon the corporeal organs, and which we poſſeſs in common with the animals; it is that tumultuous and forced action which is excited in us by objects analogous or contrary to our appetites; it is that lively and deep impreſſion of the images of thoſe objects, which, in ſpite of us, is every inſtant renewed; it is that repreſentation of objects, which, more active than even their preſence, exaggerates, falſifies, every thing. This imagination is for ever hoſtile to our ſoul; it is the ſource of illuſion, the parent of the paſſions, by which, notwithſtanding the efforts of reaſon, we are borne away, maſtered, and expoſed to a continual combat, in which we are almoſt always worſted.

HOMO DUPLEX.

THE interior man is double, being compoſed of two principles different in their nature, and contrary

trary in their action. The ſoul, that ſpiritual principle, that principle of all knowledge, is perpetually oppoſed by an animal, and a purely-material principle. The former is a pure light, accompanied with ſerenity and peace, a ſalutary ſource, whence flow ſcience, reaſon, wiſdom; the latter is a falſe light, which never ſhines but in the midſt of darkneſs and hurricane, an impetuous torrent fraught with error and paſſion.

The animal principle is developed the firſt. As it is altogether material, and as it conſiſts in the duration of the agitations, and the renovation of the impreſſions formed in our internal material ſenſe, by the objects analogous, or contrary to our appetites, it begins to act ſo ſoon as the body is capable of feeling pain or pleaſure, and it determines as ſoon as we have acquired the uſe of our ſenſes. The ſpiritual principle manifeſts itſelf leſs early, and it is developed and perfected by the means of education; it is by the communication of the thoughts of other perſons, that the infant becomes a thinking and a rational being; and, without this communication, he would be a being fantaſtic or ſtupid according to the degree of activity, or inactivity of his internal material ſenſe.

Let us conſider a child, when at liberty, and far from the eye of his maſters. By the reſult of his exterior actions, we may form a judgment of what paſſes within him. A ſtranger to thought or reflection, he treads with indifference through all the paths of pleaſure; he obeys all the impreſſions of exterior objects; he amuſes himſelf like a young animal, in running, in exerciſing his body; all his actions, all his motions, are without order, and without deſign. Preſently, however, recalled by the voice of the perſon who has taught him to think, he compoſes himſelf, he directs his actions, he gives proofs, that he has retained the thoughts

which have been communicated to him. In infancy, then, the material principle is predominant; and it would continue to predominate, and to act almoſt alone, were not education to develope the ſpiritual principle, and to give exerciſe to the ſoul.

The exiſtence of theſe two principles is eaſily diſcovered from an examination of ourſelves. In life there are inſtants, there are even hours, days, ſeaſons, in which not only may we judge of the certainty of their exiſtence, but alſo of the contrariety of their action. I allude to thoſe periods of langour, of indolence, of diſguſt, in which we are incapable of determining ourſelves to any one action, in which we will what we do not do, and do what we do not, will allude to that ſtate, or that diſtemper, which we diſtinguiſh by the name of *vapours*; a ſtate to which idle perſons are peculiarly ſubject, and from which even the moſt laborious are not exempted. If in this ſituation we obſerve ourſelves, what we call *ſelf* will appear to us divided into two diſtinct perſons, of which the firſt, repreſenting the the rational faculty, blames every thing the ſecond does, but has not ſtrength ſufficient to oppoſe it effectually, and to ſubdue it; while the ſecond, on the contrary, being formed of all the illuſions of our ſenſes, and of our imagination, conſtrains, fetters, and often overwhelms the firſt, and makes us either act contrary to what we think, or remain inactive, though diſpoſed to action by our will.

While the rational faculty prevails, we are calmly occupied with ourſelves, with our friends, with our affairs. While the material principle prevails, we devote ourſelves with ardour to diſſipation, to all the purſuits, all the paſſions which it creates; and hardly are we capable of a momentary reflection upon the very objects by which we are engroſſed. In theſe two ſtates we are happy: in the former we command with ſatisfaction; and in the latter, we are

are ſtill more pleaſed to obey. As only one of the two principles is then in action, and as it acts without oppoſition from the other principle, we feel no internal contrariety; our *ſelf* appears to us ſimply becauſe we experience only a ſimple impulſe. In this unity of action conſiſts our happineſs; for, if in ever ſo trifling a degree, we happen to condemn our pleaſures, or, from the violence of our paſſions, we attempt to diſcard reaſon, from that minute we ceaſe to be happy; from that minute the unity of our exiſtence, in which conſiſts our tranquility, is deſtroyed; the internal contrariety is renewed; and the two contending principles are felt and manifeſted by doubt, by inquietude, and by remorſe.

It is evident, then, that, of all conditions, that is the moſt unhappy, in which theſe two ſovereign powers of human nature are both in full motion, and forming an equilibrium. Then it is, that that horrible ſelf-diſguſt, which leaves us no deſire but that of ceaſing to exiſt, and which barely allows us a ſufficiency of action to effect our deſtruction, by coolly plunging into ourſelves the weapons of diſpair, and of madneſs.

In ſuch a ſtate what horror! In its blackeſt colours it is now preſented to us; but by how many of her gloomy ſhades muſt it be preceded? all the ſituations, on which this ſituation borders, all the conditions, in which the two oppoſite principles, approaching to an equilibrium, act at the ſame time, and with a force nearly equal, are neceſſarily accompanied with diſorder, with irreſolution, with unhappineſs. From this diſtreſs, and from theſe internal conflicts, the body ſuffers; and from the oppreſſion, the agitation it undergoes, at length languiſhes and decays.

As the happineſs of man conſiſts in the unity of his internal exiſtence, in the years of infancy he is happy; for then the material principle rules alone,

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and acts almoſt continually. Every conſtraint, every remonſtrance, and even every chaſtiſement, is accompanied with only a momentary ſorrow; nor by either of them is the child affected, but as by corporeal pains. The internal part of his exiſtence by no means ſuffers: ſoon as he finds himſelf at liberty, he reſumes all the activity, all the gaiety, which the vivacity, and the novelty of his ſenſations can give him. Were he left to himſelf, he would be completely happy; but this happineſs, if not checked, and even terminated, would be productive of miſery ever after. Therefore is it, that a child muſt be conſtrained: to give him a momentary grievance, is grievous to ourſelves; but ſuch grievances are neceſſary, and are, in fact, nothing more than a prelude to all his future happineſs in life.

In youth, when the ſpiritual principle begins to be exerciſed, and when already it is capable of conducting us, a new material ſenſe appears, which aſſumes an abſolute ſway, and which ſo imperiouſly commands all our faculties that the ſoul itſelf ſeems with pleaſure to incline to the impetuous paſſions which it produces. Still, then, does the material principle prevail, and ſtill, perhaps, has it more power than ever; for it not only effaces and ſubjects reaſon, but perverts it, and uſes it for its own purpoſes.

We only think, we only act, to encourage, and to gratify ſome paſſion; and while this intoxication laſts, we are happy. The contradictions, and the exterior pains, ſeem to render the unity of the interior exiſtence ſtill more firm; they fortify the paſſion, and fill up the languid intervals of it; they call forth our pride, and direct all our views toward one object, all our powers toward one end.

But this happineſs paſſes away as a dream; the charm diſappears, diſguſt enſues, and a horrid vacuity of ſentiment ſucceeds. Hardly, on rouſing

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from this lethargy, is the ſoul capable of diſtinguiſhing itſelf; by ſlavery it has at once loſt the habit and the power of commanding; of that ſlavery it even regrets the privation, and longs for a new maſter, for ſome new paſſion for its object, which preſently diſappears in his turn, and its followed by another paſſion more tranſitory ſtill. Thus one exceſs and one diſguſt is nothing more than the forerunner of another; amidſt the multiplicity of theſe, pleaſure flies, the organs decay, and the material ſenſe, far from being able to command, has no longer the ſtrength to obey. After a youth like this, what is there left for man? A body enervated, a ſoul ſoftened, and the inability to make uſe of either.

Thus it is remarked, that, at the middle period of life, men are chiefly ſubject to thoſe languors of the ſoul, to that internal malady, to that ſtate of vapours we have above deſcribed. At this period, we ſtill run after the pleaſures of youth. This we do, not from neceſſity, but from habit; and as, in proportion as we advance in years, in proportion we become leſs ſenſible of pleaſure than of the inability to enjoy it, we find ourſelves contradicted from within, and ſo often, ſo evidently, humiliated by our own weakneſs, that we cannot help blaming ourſelves, condemning our actions, and upbraiding ourſelves for our very deſires.

Beſides, it is at this age, that the cares, and the contentions of life begin. We then, whether by accident or by choice, aſſume a certain character, which it is always diſgraceful not to have aſſumed, and which it is always dangerous to fill with eclat. Full of pain, then, we tread between contempt and hatred, two rocks alike formidable; by the efforts we make to avoid them, we weaken ourſelves, and ſink into deſpondency; for, when, after having known, experienced, the injuſtice of mankind, we

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have contracted a habit of accounting it a neceſſary evil; when, in fine, we have accuſtomed ourſelves to have a leſs regard for their opinions, than for our own repoſe, and when the heart, hardened by the very ſcars of the wounds it has received, is become more inſenſible, we eaſily attain that ſtate of indifference, that indolent quietude, of which, a few years before, we ſhould have been aſhamed. Glory, that powerful mobile of great ſouls; glory, which, ſeen at a diſtance, dazzles us, and which, by brilliant actions, and by uſeful labours, we exerted every effort to obtain, is now a vain and a deluſive phantom. Sloth aſſumes its place, and ſeems to preſent to us paths leſs rugged, and advantages more ſubſtantial; but it is preceded by diſguſt, and followed by diſcontent; diſcontent, that gloomy tyrant of every thinking ſoul, againſt which, wiſdom is of leſs avail than folly.

It is becauſe human nature is thus compoſed of two oppoſite principles, that man has ſo much trouble to be reconciled with himſelf; and hence proceed his inconſtancy, his irreſolution, his diſcontent. Animals, on the contrary, whoſe nature is ſimple, and altogether material, experience no interior combats, no oppoſition, no diſorder; they have neither our ſorrows nor our compunctions, our hopes nor our fears.

Let us ſeparate from ourſelves every thing that belongs to the ſoul; let us diveſt ourſelves of underſtanding and memory. What ſhall then remain is the material part, by which we will be animals, by which, we will ſtill have wants, ſenſations, appetites, by which, we will experience pain, pleaſure, and even paſſions. What, indeed, is every paſſion, but a ſenſation, which is more ſtrong than the other ſenſations, and which is renewed at every inſtant? Now, as our ſenſations would then be renewed in our internal material ſenſe, ſo, of courſe, we would

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have all the paſſions, all the blind ones, at leaſt, which the ſoul, the principle of knowledge, can neither produce nor foment.

Here reſts the point of moſt difficulty. How can we, eſpecially from the great abuſe and conſequent confuſion, of terms, explain ourſelves, and preciſely diſtinguiſh the paſſions which belong ſolely to man, from thoſe which he poſſeſſes in common with the animals? Is it certain, is it probable, that animals have paſſions? Is it not, on the contrary, allowed, that every paſſion is an emotion of the ſoul? Ought we, therefore, to ſearch any where but in this ſpiritual principle, for the ſeeds of pride, of envy, of ambition, of avarice, and of every other paſſion by which we are governed?

To theſe queſtions I do not give a poſitive anſwer. But to me it appears, that nothing which governs the ſoul forms any part of it; that the principle of knowledge is not the principle of ſentiment; that the ſeed of the paſſions is in our appetites; that illuſions proceed from our ſenſes, and reſide in our internal material ſenſe; that the ſoul is at firſt paſſive with reſpect to them; that, when it countenances them, it is ſubdued; when it delights in them it is perverted.

Let us diſtinguiſh, then, in the human paſſions, the phyſical from the moral qualities; in other words, let us diſtinguiſh the cauſe from the effect. The firſt emotion is in the internal material ſenſe; and this the ſoul may receive, but cannot produce. Let us likewiſe diſtinguiſh momentary from durable movements; and we ſhall immediately perceive, that fear, horror, rage, love, or rather the deſire of enjoyment, are ſentiments, which, though durable, depend, however, ſolely on the impreſſion of objects upon our ſenſes, combined with the remaining impreſſions of our preceding ſenſations; and that, of conſequence, theſe paſſions we enjoy in com-

common with the brutes. I mention the actual impreſſions of objects as being combined with the impreſſions that remain of our former ſenſations; becauſe it is evident, that, either to man, or to an animal, nothing is horrible, nothing is frightful, nothing is attractive, when ſeen for the firſt time. Of this truth we may make an experiment upon young animals; ſome of whom I have ſeen throw themſelves into the fire, the firſt time it was preſented to them. By reiterated acts, of which the impreſſions ſubſiſt in their internal ſenſe, do they alone acquire experience; and though this experience is not rational, it is not, however, leſs ſure, and is even on that account more circumſpect. A great noiſe, a violent motion, an extraordinary figure, which is heard or ſeen ſuddenly, and for the firſt time, produces in the animal a ſhock of which the effect is ſimilar to the firſt movements of fear. This ſentiment, however, is only inſtantaneous. As it cannot be combined to with any preceding ſenſation, ſo it muſt communicate to the animal a tranſitory agitation, and not a durable emotion, ſuch as the paſſion of fear ſuppoſes.

A young animal, the peaceful tenant of the foreſts, who ſuddenly, and for the firſt time, hears the ſound of the huntſman's horn, or the report of a fire-arm, leaps, bounds, and flies, by the ſole violence of the ſhock which it has experienced. Yet, if this noiſe is without effect, if it ceaſes, the animal immediately, diſtinguiſhing the wonted violence of Nature, compoſes itſelf, halts, and, with an even pace, returns to its tranquil retreat. But age and experience, when, in conſequence of a ſimilar noiſe, it ſhall have been wounded, ſtruck, or purſued, rendered it circumſpect and timid. This ſenſation of pain is retained in its internal ſenſe, and, when the ſame noiſe ſhall be again heard, it is renewed, it combines itſelf with the actual agitation, it produ-

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ces a durable ſentiment, a permanent paſſion, a real fear: the animal flies, and flies with all its might, it flies to a great diſtance, and frequently never returns to its uſual abode.

Fear, then, is a paſſion of which the animal is ſuſceptible, though it has not, like us, rational, or foreſeen fears. Of horror, of rage, of love, it is alſo ſuſceptible; but it has not our averſions, founded on reflection, our durable hatreds, our conſtant friendſhips. Theſe paſſions, in the animal, imply no knowledge, no idea, and are founded ſolely on the experience of ſentiment; in other words, upon the repetition of pain, or of pleaſure, and the renovation of preceding ſenſations of the ſame kind. Fury, or, to give it another term, natural courage, is remarked in animals which feel their ſtrength, that is, which have experienced it, aſcertained it, and found it ſuperior to that of others; fear is the portion of the weak, but the ſentiment of love belongs to all.

Love! thou innate deſire! thou ſoul of nature! thou inexhauſtible principle of exiſtence! thou ſovereign power, by which every thing breathes, and every thing is renewed! thou divine flame! thou ſeed of perpetuity which the Almighty hath diffuſed univerſally with the breath of life! thou precious ſentiment, by which alone the moſt ſavage and frozen hearts are ſoftened! thou firſt cauſe of all happineſs, of all ſociety! thou fertile ſource of every pleaſure, of every delight! Love! why do'ſt thou conſtitute the felicity of every other being, and the infelicity of man?

The reaſon is obvious. Conſidered in a phyſical ſenſe, this paſſion is good; conſidered in a moral ſenſe, it is attended with every evil. In the latter reſpect, what, in reality, is love? Nothing but vanity; vanity in the pleaſure of conqueſt, an error which proceeds from our putting too high a value

upon it; vanity in the deſire of retaining it excluſively, an unhappy ſtate, of which jealouſy, a paſſion ſo little and baſe that we are aſhamed to own it, is the conſtant attendant; vanity in the very mode of relinquiſhing it. If, for example, inſtead of forſaking, we are forſaken by, the beloved object, how great the humiliation! and this humiliation, when we find that we have been duped and deceived, not unoften hurries us into a ſtate of deſpair.

To all theſe miſeries animals are by no means ſubjected. They ſeek not to obtain pleaſure, where pleaſure is not to be found: guided by ſentiment alone, they are never deceived in their choice; their deſires are always proportioned to the power of enjoyment; they feel as much as they enjoy, and they enjoy as much as they feel. Man, on the contrary, in ſtriving to invent pleaſure, only depraves nature; in ſtruggling to create ſentiment, he does nothing but pervert the intention of his being, and dig in his heart a vacuum which nothing can afterwards fill.

Every thing good in love belongs to the animals, then, altogether as much as to ourſelves; and they even, as if there were an impoſſibility that this ſentiment ſhould ever be pure, ſeem to have a ſmall portion of one of its inferior qualities. I allude to their jealouſy. Among us, this paſſion always implies ſome diſtruſt of ourſelves, ſome diſtant knowledge of our own weakneſs; animals, on the other hand, are never jealous but in proportion to their ſtrength, to their ardour for, and propenſity to, pleaſure. The reaſon is, that our jealouſy depends on our ideas, and theirs on ſentiment. Having once enjoyed, they deſire to enjoy again; and feeling in themſelves the ability for it, they drive from their preſence every other animal that would occupy their place. Their jealouſy is without reflection,

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nor has it any relation to the object of their love: of their pleaſures alone they are jealous.

But are animals confined to thoſe paſſions merely which we have here deſcribed? Are fear, rage, horror, love, and jealouſy, the only durable affections which they are capable of experiencing? To me it appears, that, independently of the paſſions of which, from their natural feelings, or rather from their experience of thoſe feelings, animals are ſuſceptible, they have moreover paſſions which are communicated to them, and which proceed from the manner in which they are bred, from example, from imitation, and from habit. They are evidently not deſtitute of a kind of friendſhip, of a kind of pride, of a kind of ambition; and though, from what has already been ſaid, we may be convinced, that, in all their operations, and in all the acts which proceed from their paſſions, there is neither reflection nor thought, nor even the ſmalleſt idea; yet, as of all their habits thoſe we now ſpeak of ſeem moſt to imply ſome degrees of intelligence, and as it is here that the ſhade between them and us is the moſt delicate, and the moſt difficult of aſcertainment, it requires in a peculiar manner our ſtrict examination.

Is there any thing comparable to the attachment of the dog to its maſter? Even over the grave that contained his duſt has this animal been known to breathe its laſt. But (without meaning to quote the prodigies and the heroes of this, any more than of any other claſs) with what fidelity does it accompany, with what conſtancy does it follow, with what attention does it defend, its maſter! What eagerneſs to obtain his careſſes! What docility in obeying him! What patience in ſuffering his bad humours, and his frequently-unjuſt corrections! What mildneſs, and what humility, in its endeavours to be reſtored to favour! What emotion, what

what anxiety, what ſorrow, when he is abſent! What joy when he returns!—From all theſe circumſtances, is it poſſible not to diſtinguiſh friendſhip? Even among ourſelves, is it expreſſed in characters of ſuperior energy?

This friendſhip is the ſame as that of a woman for her favourite bird, or of a child for its favourite play-thing. Both are equally void of reflection, both are nothing more than a blind ſentiment; and the only difference is, that that of the animal is more natural, ſince it is founded on neceſſity, while of the other the only object is, an inſipid amuſement, of which the ſoul in no degree partakes. Theſe childiſh habits ſubſiſt by idleneſs merely, and are more or leſs ſtrong, as the head is more or leſs vacant.

Real friendſhip, however, ſuppoſes the power of reflection; it is of all attachments the moſt worthy of man, and indeed the only one by which he is not degraded. Friendſhip flows from reaſon alone. It is the ſoul of a friend which we love; and, in order to love a ſoul, it is neceſſary to have one; it is neceſſary to have made uſe of it, to have known it, to have compared it, and to have found it, as far as we could diſcern, congenial with ſome other ſoul. By the term friendſhip, then, not only is implied the principle of knowledge, but alſo, from reflection, the actual exerciſe of that principle.

Thus, while friendſhip belongs ſolely to man, attachment may be ſaid to belong to animals. Sentiment alone is ſufficient to create in them an attachment to perſons whom they often ſee, by whom they are tended, by whom they are nouriſhed. The attachment of the females to their young is produced by the trouble, the employment, which they have had in carrying them, and in producing them, and which they ſtill are to have in giving them ſuck. If, among birds, the males ſeem to have an attachment to their young, and to take care of them like

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the females, it is becauſe, like them, they have been employed in the conſtruction of the neſt, becauſe they have reſided in it, becauſe they have enjoyed pleaſure in it with their females, whoſe heat laſts for a conſiderable time after they have been impregnated. Among the other ſpecies of animals, on the contrary, with whom the ſeaſon of love is very ſhort, with whom, this ſeaſon once elapſed, there is no longer aught to attach the male to the female, there is no neſt, there is no employment by which they may be mutually engaged, the male is, what a Spartan father was of old, diveſted of every care for his progeny.

The pride and the ambition of animals proceed from their natural courage; that is, from the ſenſe they have of their ſtrength, their agility, &c. The great ones hold the ſmall in defiance, and ſeem to contemn their inſulting audacity. Reaſon alone excepted, of every thing are animals ſuſceptible, of every thing are they capable. In general, they will learn to do a thouſand times, what they have learned to do once; to do without intermiſſion, what they only did by intervals; to do for a length of time, what they only did momentarily; to do chearfully, what at firſt they only did by force; to do by habit, what they once have done by chance; to do of themſelves, what they ſee others do. Of all the operations of the animal machine, imitation is the moſt admirable. It is its moſt delicate and moſt extenſive mobile, it is what exhibits the trueſt copy of thought; and though the cauſe of it, in animals, is altogether material and mechanical, yet it is by its effects that our wonder is excited. Men never more admire an ape than when they ſee it imitate the actions of men. In fact it requires no ſmall degree of penetration to diſtinguiſh ſome copies from ſome originals. Beſides, ſo few there are who can diſtinctly perceive how wide the difference is between a rea-

a reality and a counterfeit, that the groſs of mankind cannot but look upon an ape as a being worthy of their aſtoniſhment.

The truth, however, is, that, though apes have the art of imitating us, they yet are not, in their nature, a degree ſuperior to the brutes, who all, more or leſs, poſſeſs the talent of imitation alſo. In moſt animals, this talent is indeed confined to the ſpecies, and does not extend farther than to the imitation of beings like themſelves. The ape, on the other hand, to whoſe ſpecies we no more belong than it does to ours, copies, however, ſome of our actions. But this is becauſe, in ſome reſpects, it reſembles us, it is becauſe its external conformation is nearly ſimilar to ours; and this rude reſemblance is ſufficient to give it movements, and even ſucceſſions of movements, ſimilar to ours; to give it, in a word, the ability of forming a groſs imitation of us to ſuch a degree that perſons, who only view the ſurface of things, imagine that in this as in other inſtances, there is a deſign, an intelligence, a mind, while, in reality, there is nothing but an affinity of figure, of motion, and of organiſation.

It is from an affinity of motion, that the dog aſſumes the habits of its maſter, it is from an affinitiy of figure that the ape counterfeits the geſtures of a man, it is from an affinitiy of organiſation, that one bird repeats airs of muſic, and another imitates ſpeech; a leſs equivocal ſign of thought, which creates as much external difference between man and man, as between man and an animal: ſince, in ſome, it indicates a ſuperior underſtanding and an enlightened mind, in others, it barely diſcovers a confuſion of obſcure or borrowed ideas, and, in the idiot or the parrot, it indicates the laſt degree of ſtupidity; in other words, the impoſſibility under which they both labour of internally producing thought, in however great perfection they may

may poſſeſs all the organs neceſſary to expreſs it outwardly.

With eaſe may it be rendered ſtill more apparent, that imitation is nothing more than a mechanical effect, of which the perfection depends on the vivacity with which the internal material ſenſe receives the impreſſion of objects, and on the facility of expreſſing them outwardly by the ſimilitude and the flexibility of the exterior organs. Perſons whoſe ſenſes are delicate and eaſily agitated, whoſe members are active, ductile, and obedient, are, no imperfection intervening, the beſt actors, the beſt mimics, the beſt apes. Children, without perceiving it, aſſume the habits, borrow the geſtures, imitate the manners, of thoſe they live with; they have alſo a great propenſity to repeat, and to conterfeit, every thing they hear, and every thing they ſee. Young perſons, who, while they are remarkable for vivacity, are alſo remarkable for want of thought, and who ſee nothing but by the corporeal eye, are wonderfully ready in ſeizing the redicule of objects: every fantaſtic form affects, every repreſentation ſtrikes, every novelty moves them. Of theſe the impreſſion is ſo ſtrong, that they copy them with facility and grace; and therefore in a ſuperior degree do they enjoy the talent of imitation, which ſuppoſes the moſt perfect organiſation, and to which nothing is more oppoſite than a large portion of good ſenſe.

Thus, among men, it uſually happens that thoſe who reflect leaſt, are thoſe who are moſt expert at imitation; and therefore it is not ſurpriſing, that we meet with it in animals, who are altogether void of reflection. Theſe ought even to poſſeſs it in a higher degree of perfection; becauſe they have nothing within them, by which it may be counteracted, no principle by which they may have the will to be different from each other. Among us, it is by the ſoul that we differ from each other; it is by

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the ſoul that we are what we are; and it is from the ſoul that proceed the diverſity of our characters, and the variety of our actions. Animals, on the contrary, by having no ſoul, have not that *ſelf* which is the principle of the difference, the cauſe which conſtitutes the individual. Of neceſſity, then, when their organiſation is ſimilar, or when they are of the ſame ſpecies, muſt they all copy each other, do the ſame things in the ſame manner, and, in a word, imitate each other with a far greater degree of perfection than one man can imitate another. This talent for imitation, therefore, far from implying that animals have mind and thought, is a proof that they are abſolutely deſtitute of them.

For the ſame reaſon it is, that the education of animals, though exceedingly ſhort, is yet always attended with ſucceſs. Almoſt every thing the parent knows they quickly learn; and it is by imitation that they learn it. The young are modelled by the old: they perceive that theſe approach to, or fly from each other when they hear certain ſounds, when they ſee certain objects, when they ſmell certain odours; at firſt, on ſuch occaſions, they in like manner approach, or fly, without any determinative cauſe whatever, but imitation; and afterwards they approach, or fly, of themſelves, in conſequence of their having acquired a habit of doing ſo whenever they had experienced the ſame ſenſations.

Having now compared man with the animal, each taken individually, let us now compare them together collectively, and endeavour at the ſame time to aſcertain the ſource of that kind of induſtry which we obſerve in certain ſpecies of animals, and thoſe even the meaneſt and the moſt numerous. For this induſtry, what encomiums have not been beſtowed on particular inſects! Our obſervers ſeem to be ambitious of exceeding each other in admiration of the intelligence, and of the talents, of bees.

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They have, ſay they, a particular genius, an art, which belongs ſolely to themſelves, that of governing each other with wiſdom. To perceive this art, add they, requires a talent for obſervation. A hive is a republic, in which the labour of each individual is devoted to the public good, in which every thing is ordered, diſtributed, ſhared, with a foreſight, an equity, a prudence, which are aſtoniſhing. Of Athens, even in its moſt flouriſhing days, the government and the policy were not more exemplary. I ſhould never have done, were I barely to ſkip over the annals of this commonwealth, and to draw, from the hiſtory of this inſect, all the ſtrokes which have excited the admiration of its different hiſtorians.

What ſhall we think of the exceſs to which the elogiums on this animal have been carried! A bee ought, in fact, to occupy as little place in the head of a naturaliſt as it does in nature; and, in the eye of reaſon, this marvellous, and ſo much-extolled republic, will never be any thing more than a multitude of little creatures, which have no affinity to us but that of furniſhing us with wax, and with honey.

Let people examine with attention their little manœuvres, proceedings, and toils; let them deſcribe exactly their generation, their multiplication, their metamorphoſes, &c. Theſe are objects worthy of the attention of a naturaliſt; but to hear the morals of inſects cried up is inſufferable. Is not Nature ſufficiently aſtoniſhing of herſelf, without attempting to render her more ſo, and without attributing to her miracles which have no exiſtence but in our own imagination? Is not the Creator ſufficiently great by his works; and do we believe we ſhall render him more great by our weakneſs? This, were there a poſſibility of doing ſo, would be to debaſe him. Which, in effect, has the moſt exalted idea of the Supreme Being, he who beholds him create the uni-

verſe, ordain the different exiſtences, eſtabliſh nature on invariable and perpetual laws; or he who ſees him attentive in conducting a republic of inſects?

Among certain animals, there ſubſiſts a kind of ſociety, which ſeems to depend on the choice of thoſe that compoſe it, and which, of conſequence, has in it a far greater degree of intelligence and deſign, than the ſociety of bees, of which the ſole principle is, phyſical neceſſity. Elephants, beavers, apes, and many other ſpecies of animals, aſſemble together in bodies, aſſiſt, and defend each other. Did we not ſo often diſturb theſe ſocieties, and could we obſerve them with as much eaſe as thoſe of inſects, we ſhould, doubtleſs, meet with a multitude of other wonders; wonders, which ſtill, however, would amount to nothing more than ſo many phyſical relations and agreements. A great number of animals, of the ſame ſpecies, let us put together in the ſame place, and there will neceſſarily reſult a certain arrangement, a certain order, of common habits. Now every common habit, far from having for its cauſe the principle of an enlightened intelligence, implies, on the contrary, nothing more than that of a blind imitation.

Among men, ſociety depends leſs on phyſical agreements than on moral relations. Man at firſt meaſured his ſtrength and his weakneſs; he compared his ignorance and his curioſity; he felt that, of himſelf, he could not ſatisfy the multiplicity of his wants; he diſcovered the advantage he would have in renouncing the unlimited uſe of his will, in order to acquire a right over the will of others; he reflected on the idea of good and of evil; he engraved it in the bottom of his heart, by the help of the natural light which was communicated to him through the bounty of the Creator; he ſaw that ſolitude

litude was to him a ſtate of danger, and of warfare; he ſought for ſecurity and peace in ſociety; there he diffuſed his ſtrength and his knowledge, in order that, by being united to thoſe of others, both might be augmented; and of man, this union is the nobleſt work, of his reaſon, it is the wiſeſt uſe. In effect, ſolely is it becauſe he has learned to command himſelf, that he commands the univerſe; nor does he deſerve the name of man, but by his having formed ſome union with his fellow-creatures.

Every thing, it is true, has concurred to render man a ſocial being; for, though large and civiliſed ſocieties depend certainly on the uſe, and ſometimes on the abuſe, he has made of his reaſon, yet theſe are, doubtleſs, preceded by ſmaller ſocieties, whoſe ſole dependance is, as it were, on nature. A family is a natural ſociety, which is more permanent, and better founded, in proportion as the wants, and the ſources of attachment, are more numerous. Far different from the animals, man, when he is born, has hardly begun to exiſt; naked, feeble, incapable of the ſmalleſt motion, his life depends on the aſſiſtance he receives. This ſtate of infantine imbecility and impotence continues for a length of time; and the neceſſity of aſſiſtance becomes a habit by which alone could be produced the attachment of the child to the parent, and of the parent to the child. But, as, in proportion as the child advances, he is enabled to do without aſſiſtance, and as, in a phyſical ſenſe, he ſtands leſs in need of ſuccour; as on the contrary, the parent continues to be much more occupied with him than he is occupied with them; ſo it always happens that the love deſcends in a much ſtronger degree than it aſcends: the attachment of the father and the mother becomes exceſſive, blind, idolatrous, while that of the child remains luke-warm, and begins not to aſſume force, till, by the influence

influence of reaſon, the ſeed of gratitude has begun to take root.

Thus ſociety, conſidered even in the light of a ſingle family, ſuppoſes in man the faculty of reaſon; among animals which ſeem to unite together freely, and by mutual agreement, ſociety ſuppoſes ſentiment, or rather the experience of ſentiment; and among ſuch creatures as, like the bees, aſſemble together involuntarily, ſociety ſuppoſes nothing. Whatever may be the effects of it, it is evident that they were neither foreſeen, ordained, nor conceived by thoſe that execute them, and that they depend ſolely on the univerſal mechaniſm, and the laws of motion, eſtabliſhed by the Creator.

Let the panegyriſts of inſects ſay what they will, thoſe animals which, in figure, and in organiſation, bear the ſtrongeſt reſemblance to man, muſt ſtill be acknowledged ſuperior to all other animals, with reſpect to internal qualities; and, though theſe may be widely different from the internal qualities of man, though, as we have evinced, they may be nothing but the effects of the exerciſe and experience of their feelings, ſtill, nevertheleſs, are animals in a high degree ſuperior to inſects. As in every thing that exiſts in nature there is a ſhade, a ſcale may be eſtabliſhed for determining the degrees of the intrinſic qualities of each animal, by which, when oppoſed with the material part of man, we ſhall acknowledge the preference due to the ape, the dog, the elephant, and, in different degrees, to all the other quadrupedes. Next to them we ſhall find the cetaceous animals, which, like man, and like the quadrupedes, have fleſh and blood, and which, like them, are viviparous. In the third claſs will be the birds, becauſe, every circumſtance included, they differ more from man than either the quadrupede or the cetaceous animals; and, were it not that there are beings which, like the oyſter and the

the polypus, ſeem to differ from him as much as it is poſſible to differ, the inſects would with juſtice occupy the fourth and loweſt claſs.

But, if animals are deſtitute of all underſtanding, all memory, all intelligence, and if all their faculties depend on their ſenſes, whence proceeds that foreſight we remark in ſeveral of them? By ſentiment alone can they be prompted to hoard up, during the ſummer, proviſions ſufficient for their ſubſiſtence during the winter? Does not this ſuppoſe a compariſon of ſeaſons, a notion of futurity, a rational inquietude? Why, it may alſo be aſked, would birds build to themſelves neſts, if they did not know, that they ſhould have occaſion for them, in order to depoſit their eggs, and to rear their young?

Admitting the truth of theſe, and many other circumſtances which might be produced; admitting, with thoſe who ſo confidently enlarge upon them, that they are ſo many proofs of preſſentiment, of foreſight, and even of a knowlege of futurity, in animals; muſt it follow, that animals are, on that account, intelligent beings? Were this the caſe, their intelligence would far ſurpaſs our own. Our foreſight, for example, is always conjectural; our notions, with reſpect to what is to come, are, at beſt, doubtful; all the light we derive from our ſoul is hardly ſufficient to give us a glimpſe even of the probabilities of future things. Animals, then, who ſee theſe with certainty, ſince they determine their actions before-hand, and are never deceived in this determination, muſt have within them ſomething greatly ſuperior to the principle of our knowledge, muſt have within them a ſoul far more penetrative, far more acute, than ours; a conſequence, which, I preſume, is equally repugnant to religion and to reaſon.

By

By an intelligence ſimilar to that of man, it is impoſſible, that animals can have any certain knowledge of futurity; ſince with reſpect to futurity, the notions of man are always imperfect and full of doubt. Then why, on ſuch ſlight grounds, inveſt them with a quality ſo ſublime? Why, without neceſſity, degrade ouſelves? Would it not be leſs unreaſonable, ſtill allowing all the facts to be true, to attribute their ſource to mechanical laws, eſtabliſhed, like all the other laws of Nature, by the will of the Creator. The certainty with which we ſuppoſe animals to act, and be determined, might alone ſuffice to convince us, that every thing they do is merely mechanical. Of reaſon, the eſſential characteriſtics are, doubt, deliberation, compariſon; but motions and actions, which announce nothing but deciſion and certainty, exhibit at once a proof of mechaniſm, and of ſtupidity.

It is not ſurpriſing, that man, who knows ſo little of himſelf, who ſo frequently confounds his ſenſations with his ideas, who ſo imperfectly diſtinguiſhes the produce of his ſoul from the produce of his brain, ſhould compare himſelf to the animals, and ſhould admit, between them and him a ſhade dependent on the greater or leſs degree of perfection in the organs; it is not ſurpriſing, that he ſhould make them reaſon, determine their actions, and underſtand each other, as he and his fellow-creatures do, and that he ſhould attribute to them, not only the qualities which he has, but even thoſe which he has not. When man, however, has once thoroughly examined and analyſed himſelf, he will diſcover the dignity of his being, he will feel the exiſtence of his ſoul, he will ceaſe to demean himſelf, and, with a ſingle glance, he will ſee the infinite diſtance which the Supreme Being has put betweeen the beaſts and him.

God

God alone knows the paſt, the preſent, and the future; eternal is his exiſtence, and infinite is his knowledge. Man, on the other hand, whoſe duration is, as it were, but for a few moments, perceives but thoſe moments: by a living and an immortal Power, however, are thoſe moments compared, diſtinguiſhed, ordained; and That Power it is, which enables him to know the preſent, to judge of the paſt, and to foreſee the future. Deprive Man of this divine light, and you efface, you obſcure, his being, you render him an animal merely: he will be ignorant of the paſt, he will have no conception of the future, nor will he even know what is meant by the preſent.

CHAP. II.

Of Domeſtic Animals.

MAN changes the natural ſtate of animals by forcing them to obey him, and rendering them uſeful to him: a domeſtic animal is a ſlave which amuſes us, which we make uſe of, which we abuſe, which we bring from its natural place of abode, and tame, while the wild animal knows no other laws than thoſe of its wants and liberty. The hiſtory of a wild animal is confined to a few facts drawn from ſimple nature, inſtead of which the hiſtory of a domeſtic animal is compoſed of all the artful means uſed to deprive it of its liberty, or to ſubdue it; and as we have no example how far conſtraint, or the force of cuſtom, may influence animals, and change their motions, determinations, and inclinations, the deſign of the naturaliſt ought to be to diſtinguiſh thoſe things

things which depend on inſtinct, from thoſe which are owing to their mode of education; to know what properly appertains to them, and what they have acquired; to diſtinguiſh what is natural for them to do, from what they are made to do; and never to confound the animal with the ſlave, the beaſt of burden with the creature of God.

The empire which man has over animals, is an empire which revolution cannot overthrow; it is the empire of the ſpirit over matter, it is not only a right of nature, a power founded on unalterable laws, but a gift of God, by which man may learn every moment the excellence of his being: for he does not rule them, becauſe he is the moſt perfect, the ſtrongeſt, or the moſt artful, of animals. If he was only the firſt of the ſame order, the ſecond in rank would unite together to diſpute the empire with him: but it is from the ſuperiority of his nature that man reigns and commands; he thinks, and for this reaſon is maſter over beings that are incapable of thinking. He is maſter over the bodies of brutes, who can only oppoſe to his will a ſullen reſiſtance, or an inflexible ſtupidity; and he can always overcome, by making them act againſt each other: he is alſo maſter of the vegetable creation, which by his induſtry he can augment, diminiſh, renew, tranſplant, deſtroy, or multiply *ad infinitum*: he is maſter of all animals, becauſe like them he not only has motion and ſenſation, but poſſeſſes alſo the light of reaſon; is capable of governing his actions, concerting his operations, and of overcoming force by cunning, by ſwiftneſs, and by the employment of his time. Nevertheleſs, among animals ſome appear more or leſs familiar, more or leſs ſavage, more or leſs gentle, more or leſs ferocious than others: let us compare the docility and ſubmiſſion of the dog with the cruelty and ferocity of the tiger, and one will appear to be the friend of man, the other his enemy;

his

his empire, then, over animals is not abſolute; but how many ſpecies can eſcape his power by the rapidity of their ſwiftneſs in running, by the obſcurity of their retreats, by the diſtance which the element they inhabit places between them and mankind? How many other kinds eſcape him from their minuteneſs? And, in ſhort, how many others are there who, far from reſpecting their ſovereign, openly attack him, without mentioning thoſe inſects which ſeem to inſult him by their ſtings, thoſe ſerpents whoſe bite carries poiſon and death, and many other unclean, troubleſome and uſeleſs creatures that ſeem only to exiſt to form a ſhade between good and evil, and to make man comprehend how little reſpectable his fall has made him?

We muſt diſtinguiſh, then, the empire of God from the domain of man: God, the creator of all beings, is the only maſter of nature; man has no command over the productions of the creation; he can have none over the heavenly bodies, over the revolutions of the globe which he inhabits, over animals, vegetables, or minerals in general; he can do nothing with ſpeces, his power only extends to individuals; for ſpecies in general and matter in the groſs, belong to nature or rather conſtitute it. All things paſs away, follow, ſucceed, are renewed and decay, by an irreſiſtable power; man, dragged on by the torrent of time, can do nothing for his own continuance by his body linked to matter; wrapped up in a whirlwind of beings, he is forced to ſubmit to the common law; he obeys the ſame power, and like all the reſt comes to maturity and dies.

But the divine ray with which man is animated, ennobles and raiſes him above all other material beings. This ſpiritual ſubſtance, far from being ſubject to matter, has the power of making it obey; and though it cannot command all Nature, it preſides over particular beings: God, the ſole ſource of

all light and underſtanding, rules the univerſe and the whole ſpecies with an infinite power; man, who poſſeſſes only a ray of this ſpiritual ſubſtance, has only a power limited to ſmall portions of matter, and is maſter of individuals only.

It is by the talent of the mind, then, and not by force, and the other qualities of matter, that man has found out the art of ſubduing animals. In the firſt ages they were all equally independant; man became guilty and ferocious; was very unfit to deprive them of their liberty; time was neceſſary to approach them, to know them, to make choice of, and to tame them. It was neceſſary that he ſhould be civilized himſelf to know how to inſtruct and command; and the empire over animals, like every other empires, was not founded till after ſociety.

'Tis from ſociety that man maintains his power; from that he has perfected his reaſon, exerciſed his wit, and united his ſtrength: formerly man was perhaps the moſt ſavage, and the leaſt formidable of all creatures; naked, defenceleſs, and without ſhelter, the earth to him was only a vaſt deſert peopled with monſters, of which he frequently became the prey; and even long after, hiſtory informs us that the firſt heroes were only the deſtroyers of beaſts.

But as in time the human race multiplied, and ſpread over the face of the earth, and as by the aid of the arts, and of ſociety, man has been able by force to conquer the univerſe, he has by degrees leſſened the number of ferocious beaſts, has purged the earth of thoſe gigantic animals of which we ſometimes ſtill find the enormous bones; he has deſtroyed, or reduced to a ſmall number of individuals, every hurtful and voracious ſpecies, has oppoſed animals to animals, and conquered ſome by fraud, others by force, till, by frightening them away, and attacking them by every rational method, he has arrived at the means of ſafety, and has eſtabliſhed an empire which


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which is only bounded by inacceſſible places, hidden ſolitudes, burning ſands, frozen mountains, and obſcure caverns, which ſerve as retreats for the ſmall number of ſpecies of untractable animals.

THE HORSE.

THE nobleſt conqueſt ever made by man, is that of this ſpirited and haughty animal, which ſhares with him the fatigues of war, and the glory of the combat. Equally intrepid as his maſter, the horſe ſees the danger, and braves it; inſpired at the claſs of arms, he loves it, he ſeeks it, and is animated with the ſame ardour. He feels pleaſure alſo in the chace; in tournaments in the courſe, he is all fire, but equally tractable as courageous, does not give way to his impetuoſity, and knows how to check his inclinations: he not only ſubmits to the arm which guides him, but even ſeems to conſult the deſires of his rider; and, always obedient to the impreſſions which he receives from him, preſſes on, moves gently, or ſtops, and only acts as his rider pleaſes. The horſe is a creature which renounces his being, to exiſt only by the will of another, which he even knows how to anticipate, and even expreſs, and execute by the promptitude and exactneſs of his movements: he feels as much as we deſire, does only what we wiſh, giving himſelf up without reſerve and refuſes nothing, makes uſe of all his ſtrength, exerts himſelf beyond it, and even dies the better to obey us.

Such is the horſe, whoſe talents are enveloped, and whoſe natural qualities art has improved, which from the earlieſt ages has been taken care of and afterwards exerciſed, and broke to the ſervice of man; his education commences with the loſs of his liberty, and by conſtraint it is finiſhed. The ſlavery or ſervitude of theſe creatures is univerſal, and ſo ancient that we

we rarely ſee them in their natural ſtate: they are always covered with harneſs when at work, and are never wholly free from all their bands, not even at the time of reſt; and if they are ſometimes ſuffered to range at liberty in the fields, they always bear about them marks of ſervitude, and frequently the cruel marks of labour and of pain: the mouth is deformed by the wrinkles occaſioned by the bit, the flanks ſcarred with wounds, inflicted by the ſpur, the hoofs are pierced by nails, the attitude of the body conſtrained from the ſubſiſting impreſſion of habitual ſhackles, from which they would be delivered in vain, as they would not be the more at liberty for it. Even thoſe whoſe ſlavery is the moſt gentle, who are only fed and broke for luxury and magnificence, and whoſe golden chains ſerve leſs to decorate them, than to ſatisfy the vanity of their maſter, are ſtill more diſhonoured by the elegance of their trappings, by the treſſes of their manes, by the gold and ſilk with which they are covered, than by the iron ſhoes on their feet.

Nature is more beautiful than art, and in an animated being, the freedom of its movements makes nature beautiful: obſerve the horſes in Spaniſh America, which live wild, their gait, their running, or their leaping, ſeem neither conſtrained nor regular. Proud of their independance, they fly the preſence of man, and diſdain his care, they ſeek and find for themſelves proper nouriſhment; they wander and ſkip about in liberty, in immenſe meads where they feed on the freſh productions of an eternal ſpring: deſtitute of any fixed habitation, without any other ſhelter than a mild ſky, they breathe a purer air than thoſe which are confined in vaulted palaces. Theſe wild horſes are alſo much ſtronger, much ſwifter, and more nervous than the greater part of domeſtic horſes; they have, what nature has beſtowed upon them, ſtrength

ſtrength and nobleneſs, the others, only what art can give, beauty and cunning.

The natural diſpoſition of theſe animals is not ferocious, they are only high-ſpirited and wild; and though ſuperior in ſtrength to the greateſt part of animals, they yet never attack them; and if they are attacked by others, either diſdain them or trample them under their feet. They go alſo in bodies, and unite themſelves into troops, merely for the pleaſure of being together, for they are not fearful of, but have an attachment to each other. As herbs and vegetables are ſufficient for their nouriſhment, they have quite enough to ſatisfy their appetite; and as they have no reliſh for the fleſh of animals, they never make war with them, nor with themſelves, they never quarrel abodt their food, they have no occaſion to raviſh the prey of another, the ordinary ſource of contentions and quarrels among carniverous animals. They live in peace becauſe their appetite is ſimple and moderate; and, as they have enough, there is no room for envy.

All this may be obſerved in young horſes which are brought up together, and which are led together in droves: their manners are gentle, and their qualities ſocial; they ſeldom ſhow their ardour and ſtrength by any other ſign than emulation; they endeavour to be foremoſt in the courſe, are animated by danger, and will defy one another to croſs a river or leap a ditch, and thoſe which in theſe natural exerciſes ſet the example, are themſelves the moſt generous, the nobleſt, and often the moſt docile, and gentle, when once broke.

Some ancient authors ſpeak of wild horſes, and even mention the places where they are to be found. Herodotus ſays, that on the banks of the Hypanes in Scythia, there were wild horſes which were white; and that in the northern parts of Thrace, beyond the Danube, there were others which had the hair

of

of the body five feet long. Ariſtotle alſo cites Syria; Pliny, the northern countries; Strabo, the Alps and Spain; as places where wild horſes were to be found. Among the moderns, Carden mentions the ſame thing of the Orcades; Olaus, of Muſcovy; Dapper, of the Iſle of Cyprus, which, as he ſays, contained wild horſes, very beautiful, which poſſeſſed both ſtrength and ſwiftneſs; Struys, of the Iſle of May, one of the Cape de Verd iſlands, where he found wild horſes very ſmall. Leon the African alſo relates, that there were wild horſes in the deſerts of Arabia and Lybia; and he aſſures us, that he ſaw, in the remoteſt parts of Numidia, a colt with a curled mane, of which the hair was white. Marmel confirms this fact, aſſerting, that ſome are found in the deſerts of Arabia and Lybia, ſmall, and of an aſh-colour; there are alſo ſome white, whoſe manes and coats are ſhort and rough; and that neither dogs nor tame horſes can equal them in ſwiftneſs: we read alſo, in the Letters of the Miſſionaries, that in China there are wild horſes of a very ſmall ſize.

As all parts of Europe are at preſent peopled, and almoſt equally inhabited, wild horſes are no longer found therein; and thoſe which we ſee in America, were originally European tame horſes, tranſported thither by the Spaniards, which have multiplied in the vaſt deſerts of this country, partly peopled and partly uninhabited, for this ſpecies of animals was wanting in the new world. The aſtoniſhment and fear which the inhabitants of Mexico and Peru expreſſed at the ſight of horſes and their riders, convinced the Spaniards that this animal was intirely unknown in theſe countries; they therefore carried thither a great number as well for ſervice, and their particular utility, as to propagate the breed. They left them on many iſlands, and even let them looſe on the continent, where they have multiplied

multiplied like other wild animals. M. de la Salle, in 1685, ſaw in the northern parts of America, near the Bay of St. Louis, whole troops of theſe wild horſes feeding in the paſtures, which were ſo fierce that no one dared to approach them. The author of the Hiſtory of the Adventures of the Buccaneers, ſays, that in the iſland of St. Domingo, horſes may ſometimes be ſeen in troops of upwards of five hundred, all running together, and that as ſoon as they ſee a man, they will all ſtop; that one of them will approach to a certain diſtance, ſnort, take flight, and then all the reſt will follow him. He adds alſo, "that he does not know whether theſe horſes, by becoming wild, have degenerated or not; but that he did not think them ſo handſome as thoſe of Spain, though they are deſcended from the ſame breed: they have (ſays he) large heads as well as thick legs, which are alſo rough; their ears and neck are alſo long: the inhabitants of the country eaſily catch them, and afterwards force them to work; the hunters make them carry their ſkins. To catch them, they make uſe of nooſes made of ropes, which they ſpread and hang in places which they know they frequent: but if they are catched by the neck they ſtrangle themſelves, unleſs the hunter comes time enough to their aſſiſtance, who inſtantly ſecures them by the body and legs, and faſtens them to trees, where they are left for two days without either food or drink. This experiment is ſufficient to begin to make them tractable, and in time they become as much ſo as if they had never been wild; and even, if by chance they ever regain their liberty, they never become ſo again, but know their maſters, and ſuffer them to catch them again without trouble.

This proves that theſe animals are naturally gentle, and diſpoſed to be familiar with man, and to attach themſelves to him; nor does it ever happen, that

that any horſe will quit our houſes to retire into the woods or deſerts; on the contrary, they ſhew a great inclination to return to their old habitations, where perhaps they find but coarſe food, always the ſame, and generally meaſured out to them with a ſparing hand, without conſidering their appetites. Cuſtom, however, ſerves them in lieu of what they loſe elſewhere. When worn out with fatigue, the place of reſt is to them the moſt delicious; they know it at a great diſtance, and can even find it out in the midſt of large towns; and in every thing they ſeem to prefer ſlavery to liberty; the cuſtoms to which they have been forced to ſubmit, become a ſecond nature to them; for horſes abandoned in the woods have been known to neigh continually to make themſelves heard, and gallop towards the object on hearing a human voice; at the ſame time they will grow thin, and periſh in a ſhort time, notwithſtanding they have it in their power to vary their food, and plentifully ſatisfy their appetites.

Their manners, then, almoſt wholly depend on their education; and this education ſuppoſes pains and cares which man takes for no other animal, and for which he is well requited by their continual ſervices. From time immemorial it has been the cuſtom to ſeparate the colts from their mothers: mares are ſuffered to ſuckle them five, ſix, or ſeven months; for experience has taught us, that thoſe colts which are ſuckled ten or eleven months, are not of equal value with thoſe which are weaned ſooner, though they are generally fuller of fleſh. After ſix or ſeven months ſucking, they are weaned, that they may take more ſolid nouriſhment than milk; bran is then given them twice a day, and a little hay, of which the quantity is increaſed in proportion as they advance in age, and they are kept in the ſtable as long as they ſeem to retain any deſire to return to the mare; but when this deſire ceaſes, they are ſuffered

fered to go out in fine weather, and led to paſture; but care muſt be taken not to ſuffer them to go out out to paſture faſting; they muſt have bran, and be made to drink an hour before they are ſuffered to graze, and are never to be expoſed to great cold or rain: in this manner they ſpend the firſt winter: in the May following, they are not only permitted to graze every day, but are ſuffered to lay in the fields all the ſummer, and even to the end of October, only obſerving not to let them eat the after-graſs; for if they accuſtom themſelves much to it, they will grow diſguſted with hay, which ought however to be their principle food, during the ſecond winter, together with bran mixed with barley, or oats wetted: They are managed in this manner, letting them graze in the day time during winter, and in the night alſo during the ſummer, till they are four years old, when they are taken from the paſtures, and fed on hay. This change in his food requires ſome precaution; for the firſt eight days, the colt ſhould have nothing but ſtraw, and it is proper to adminiſter ſome vermifuge drinks, as thoſe inſects may have been generated from indigeſtion, and green food. M. de Gaurſault, who recommends this practice, does it undoubtedly from experience; but we find, that at all ages and in all ſeaſons, the ſtomachs of horſes are ſtuffed with a prodigious number of worms, which they ſeem to engender conſtitutionally. They are found in healthy horſes as well as in horſes that are ſick; in thoſe which graze in the fields, as well as in thoſe that eat nothing but oats and hay; and aſſes, which of all animals approach neareſt to the nature of the horſe; have alſo a prodigious number of worms in their ſtomachs, and are not more incommoded thereby. For this reaſon worms ſhould not be looked, as an accidental complaint cauſed by bad digeſtion and green food,

but rather as a common effect depending upon the nouriſhment and digeſtion of theſe animals.

Great attention muſt be paid in weaning young colts, to put them into a proper ſtable, neither too hot, for fear of making them too delicate and ſenſible to the impreſſions of the air. They ſhould frequently have freſh litter and be kept very clean, by frequently rubbing them down with a wiſp of ſtraw. But they ſhould not be tied up or curried till they are two years and a half, or three years old, this currying, gives them great pain, their ſkin being as yet too delicate to bear it, and they would fall away inſtead of growing fat from it; care muſt alſo be taken that the rack and manger are not too high, the neceſſity of raiſing their heads too high in order to reach their food, may poſſibly give a habit of carrying it in this faſhion, which would give him an aukward appearance.

When they are about a year or eighteen months old; the tail ought to be cut, as the hair will then grow ſtronger and thicker. From two years old colts muſt be ſeparated, the males muſt be put with the horſes and the females with the mares; without this precaution the colts would fatigue and enervate themſelves with the fillies to no purpoſe.

At the age of three years, or three years and a half, the rider ſhould begin to break them and make them tractable; they ſhould at firſt have a light eaſy ſaddle, and ought to wear it two or three hours every day, and they ſhould be accuſtomed to have a ſnaffle bit in their mouths, and to lift up their feet on which they ſhould ſometimes receive rather ſmart ſtrokes, and if deſigned for coach or draught horſes, ſhould wear harneſs and a bridle. At firſt a curb ſhould not be uſed, they ſhould be held by a caveſſon or leather ſtrap, and be made to trot, on even ground, without a rider, and with only the ſaddle or harneſs on the body: and when the

the ſaddle horſe turns eaſily, and willingly follows the perſon who holds the leather ſtrap, the rough rider ſhould mount him and diſmount again in the ſame place without making him move, till he is four years old, becauſe, before that age, the weight of a man overloads him, but at four years he ſhould be made to walk or trot, a little way at a time, with the rider on his back. When a coach horſe is accuſtomed to the harneſs, he ſhould be paired with a horſe that is thoroughly broke, putting on him a bridle, with a ſtrap paſſed through it, till ſuch time as he begins to be uſed to the draught; after this the coachman muſt teach him to back, having the aſſiſtance of a man before, who muſt puſh him gently back, and even give him ſome blows to make him do it: all this ſhould be done before young horſes have changed their food, for when once they are what is called corn-fed, that is, when they feed on grain and hay, as they are more vigorous, it is remarked alſo that they are leſs tractable, and more difficult to break.

The bit and the ſpur are two means made uſe of to bring them into order. The mouth does not appear formed by nature to receive any other impreſſions than that of taſte and appetite, there is, however, ſo great a ſenſibility in the mouth of a horſe, that in preference to the eyes and ears, we addreſs ourſelves to it, to make him underſtand our pleaſure; the ſmalleſt motions or preſſure of the bit, is ſufficient to inform and determine the animal, and this organ of ſenſe has no other fault than its perfection. Its too great ſenſibility muſt be managed, for if it is abuſed, the mouth of the horſe is ſpoilt, and rendered inſenſible to the impreſſion of the bit; the ſenſes of ſight, and hearing, are not ſubject to ſuch a change, and could not be dulled in this manner; but in all likelihood, it has been found inconvenient to govern horſes by theſe organs, and it is true

true that ſigns given them by the ſenſe of feeling have more effect on animals in general than thoſe convey by the eyes or ears; beſides the ſituation of horſes with relation to thoſe who mount or conduct them, makes their eyes almoſt uſeleſs for this purpoſe, becauſe they ſee only ſtraight forwards, ſo that they could only perceive the ſigns made to them when they turned their heads round; and although they are frequently conducted and animated by the ear, and it appears that the uſe of this organ is limited to common horſes, becauſe at riding-ſchools, the moſt perfect places of education, the riding maſters ſeldom ſpeak to horſes, and do not even ſeem to direct them; and, in fact, if they are well broke, the ſmalleſt preſſure of the thighs, or moſt trifling motion of the bit, is ſufficient to direct them; the ſpur is even uſeleſs, or at leaſt it is only made uſe of to force them to violent motions, and as through the folly of the rider, it often happens that in giving the ſpur, he checks the bridle, the horſe finding himſelf excited on one ſide, and kept in on the other, only prances and capers without ſtirring out of his place.

By means of the bridle we learn horſes to hold up their heads, and place them in a proper manner, and the ſmalleſt ſign or movement of the rider is ſufficient to make the horſe ſhew all his different paces; the moſt natural is perhaps the trot, but pacing and galloping is more pleaſant for the rider, and theſe are the two paces we particularly endeavour to improve. When the horſe lifts up his fore-legs to walk, this motion ſhould be performed with ſpirit and eaſe, and the knee ſufficiently bent; the leg lifted up ſhould ſeem as if ſuſpended for a moment, and when the animal lets it down, the foot ſhould be firmly reſted on the ground without the horſes head receiving any impreſſion from this motion: for when the leg is ſuddenly let fall down, and the head bowed at the ſame time,

'tis uſually to eaſe the other leg, which has not ſtrength to ſupport the whole weight of the body. This is a great fault, as well as that of carrying the foot too far out or in, for it falls in the ſame direction. We ſhould alſo obſerve, that when he reſts on his heel, it is a mark of weakneſs, and that when he reſts on the forepart of his hoof, it is a fatiguing and unnatural attitude that he cannot long ſupport.

Though walking is the ſloweſt of all their paces, an horſe ſhould, notwithſtanding, ſtep quick, and neither take too long or too ſhort ſteps; his carriage ſhould be eaſy, this eaſe depends much on the liberty of his ſhoulders, and is known by the manner in which he carries his head in walking; if he keeps it high and ſteady, he is generally vigorous, quick, and free in his motions. When the motion of the ſhoulders is not free, the leg does not riſe enough, and the horſe is apt to ſtumble, and ſtrike his foot againſt the inequalities on the ground; and when the ſhoulders are ſtill more confined in their action, and the motion of the legs appears free, the horſe is ſoon fatigued, ſtumbles, and becomes uſeleſs. A horſe ſhould raiſe his ſhoulders, and his lower haunches, in walking; he ſhould alſo ſupport his leg, and raiſe it high enough, but if he keeps it up too long, or lets it fall too ſlowly, he loſes all the advantage of his ſuppleneſs, becomes heavy, and fit for nothing but to match with another, and for ſhew.

It is not ſufficient that his walk ſhould be eaſy, his ſteps muſt be alſo equal and uniform both behind and before, for his buttocks have a ſwinging motion whilſt he keeps up his ſhoulders, the rider is much jolted, which is very uneaſy to him: the ſame thing happens when the horſe extends his hind leg to much, and reſts it almoſt in the ſame place in which he reſted his fore foot. Horſes with ſhort bodies are ſubject to this fault; thoſe which

croſs

croſs their legs or ſtrike them againſt each other, are are not ſure footed; and in thoſe whoſe bodies long, are the moſt eaſy for the rider, becauſe he is at a greater diſtance from the two centres of motion, the ſhoulders and haunches, and is therefore leſs ſenſible of the motion and jolting.

The uſual method of walking among quadrupedes, is to lift up at the ſame time one of the fore legs and one of the hind legs; whilſt the right fore leg is in motion, the left hind leg follows and advances at the ſame time, and this ſtep being made, the left fore leg conjointly with the right hind leg in its turn, and ſo on. As their bodies are ſupported upon four points of ſupport, which form a long ſquare, the eaſieſt manner of moving for them, is to change two of them at once in a diagonal line, in ſuch a manner, that the centre of gravity of the body of the animal may move but little, and reſt always in the direction of the two points which are not in motion in the three natural paces of the horſe, the walk, the trot, and the gallop, this rule of motion is always obſerved, but with ſome difference. In the walk, there are four times in the movement; if the right fore leg moves firſt, the left hind leg follows the moment after, then the left fore leg moves forward in turn, to be followed the inſtant after by the right hind leg; thus the right fore foot reſts on the ground firſt, the left hind foot next, then the left fore foot reſts, and laſtly, the right hind foot, which makes a movement of four times, and at three intervals, of which, the firſt and laſt are ſhorter than the middle one. In the trot there are but two times in the movement; if the right fore leg goes off firſt, the left hind leg moves at the ſame time, and without there being any interval beeween the motion of the one, and the motion of the other; alſo the left fore leg moves at the ſame time with the right hind one, in ſuch a manner, that there are in this move-

movement of trotting, only two times and one interval; the right fore foot and the left hind foot reſts on the ground at the ſame, and then the left fore foot and the right hind one reſts at the ſame time alſo.

In the gallop there is uſually three times; but as in this movement there is a kind of leaping, the interior parts of the horſe do not move of themſelves, but are drove away by the ſtrength of the haunches and the hinder parts: thus, of the two fore legs, the right ought to advance more forward than the left; the left ought before hand to reſt on the ground to ſerve as a point of reſt for the ſudden jirk which he takes: thus it is the left hind foot that makes the firſt time of the movement, and which reſts on the ground firſt; then the right hind leg is lifted up conjointly with the left fore leg, and reſt on the ground together: at length, the right fore leg, which is raiſed an inſtant after the left fore leg, and right hind one, reſts on the ground laſt, which makes the third time: thus, in this movement of the gallop, there are three times and two intervals; and in the firſt of theſe intervals, when the movement is made with haſte, there is an inſtant when the fore legs are in the air at the ſame time, and where the four ſhoes of the horſe may be ſeen at once. When the horſe has the haunches and the houghs ſuple, and moves them with quickneſs and agility, the movement of the gallop is more perfect, and the cadence is made in four times: he then reſts the left hind foot which ſhews the firſt time; then the right hind foot falls to the ground and ſhews the ſecond time; the left fore foot falls a moment after, ſhewing the third time; and at length the right fore foot, which reſts laſt, ſhews the fourth time.

Horſes uſually gallop on the right foot, in the ſame manner as they carry the fore right leg in walking and trotting; they alſo throw up the dirt in galloping with the

the right fore leg, which is more advanced than the left; and alſo the right hind leg which follows immediately the right fore one, is alſo more advanced than the left hind leg, and that the whole time that the horſe continues to gallop: from whence it reſults, that the left leg which ſupports all the weight, and which forces forwards the others, is more tired; for this reaſon it would be right to exerciſe horſes in galloping alternately on the left foot, as well as on the right; they would bear much longer this violent motion, and it is what is done in the riding ſchools; but, perhaps for another reaſon, which is, that as they often make them change hands, that is to ſay, deſcribe a circle, the centre of which is ſometimes on the right, ſometimes to the left; they therefore oblige them to gallop ſometimes on the right foot, and ſometimes on the left.

In walking, the legs of the horſe are lifted up only a ſmall height, and the feet almoſt ſcrape the ground; in trotting they are raiſed higher, and the feet are entirely free from the ground; in galloping the legs are lifted up ſtill higher, and the feet ſeem to rebound from the earth. The walk to be good ſhould be quick, eaſy, light, and ſure; the trot ſhould be firm, quick, and equally ſuſtained; the hind foot ought to follow well the fore foot: the horſe in this pace ſhould carry his head high, and his back ſtraight; for, if the haunches riſe and fall alternately at each trot he takes, if the crupper moves up and down, and the horſe rocks himſelf, he trots ill through weakneſs; if he throws out wildly his fore legs, it is another fault: the fore legs ſhould tread in a line with the hind ones, and always efface their tracks. When one of the hind legs is thrown forwards, if the fore leg of the ſame ſide remains in its place too long, the motion becomes more uneaſy and difficult from this reſiſtance; and it is for this reaſon that the interval between the

two

two times of the trot ſhould be ſhort; but, be it ever ſo ſhort, this reſiſtance is ſufficient to make this pace more uneaſy than walking and galloping, becauſe in walking the motion is more eaſy, gentle, and the reſiſtance leſs; and in galloping there is ſcarcely any horizontal reſiſtance, which is the only one inconvenient for the rider, the re-action of the motion of the fore legs being almoſt from top to bottom in a perpendicular direction.

The ſpring of the houghs contributes as much to the motion of galloping, as that of the loins: whilſt the loins uſe their utmoſt efforts to raiſe and puſh forward the hinder parts, the fold of the hough makes the ſpring, breaks the blow, and leſſens the ſtroke: thus, the more pliant the ſpring of the hough, the more gentle is the motion in galloping: it is alſo more quick and rapid in proportion to the ſtrength of the houghs, and is beſt ſupported in proportion as the horſe bears himſelf moſt on his haunches, and as the ſhoulders are more ſupported by the ſtrength of the loins. Beſides, horſes which in galloping lift up their fore legs very high, are not thoſe which gallop the beſt, they make the leaſt diſpatch and are moſt fatigued, and this uſually happens from their not having their ſhoulders ſufficiently free.

Walking, trotting, and galloping, are the moſt uſual natural paces; but ſome horſes have another natural pace, called the amble, which is very different from the three others, and, at the firſt glance of the eye, appears contrary to the laws of mechanic, and extremely fatiguing to the animal, notwithſtanding, in this pace, the quickneſs of motion is not ſo great as in galloping, or trotting hard. In this pace the foot of the horſe grazes the ground ſtill more than in walking, and each ſtep is much longer. But the moſt remarkable circumſtance is, that the two legs on the ſame ſide, for example, the

fore and hind leg on the right ſide, ſet off at the ſame time to make a ſtep; and afterwards the two left legs move alſo at the ſame time to make another, ſo that each ſide of the body alternately is without ſupport, and there is no equilibrium maintained between the one or the other; which cannot fail to fatigue the horſe greatly, which is obliged to ſuſtain itſelf in a forced balance, by the rapidity of a motion which is ſcarcely clear of the ground: for if the horſe raiſed his feet in this pace, as much as he raiſes them in trotting, or even in walking quick, the ſwinging motion would be ſo great, that he could not fail falling on his ſide; and it is only from his almoſt grazing the earth, and the quick alternate motion, that he can ſupport himſelf in this pace, where the hind leg ſhould not only go off at the ſame time with the fore leg, on the ſame ſide, but ſhould alſo advance upon it, and reſt a foot, or a foot and a half, beyond the ſpot where that has been placed: the greater this ſpace is, the better the horſe ambles, and the more rapid the whole motion. There is, therefore, in the amble, as well as in the trot, but two times in the motion; and all the difference is, that in the trot the two legs which go together are oppoſite, in a diagonal line; inſtead of which, in the amble, the two legs on the ſame ſide go together: this pace, which is extremely fatiguing to the horſe, and which he ſhould never be ſuffered to uſe, but on even ground, is very eaſy for the rider, as it has not the jolting of the trot, which is occaſioned from the reſiſtance the fore leg meets with when the hind leg riſes; becauſe, in the amble, the fore leg riſes at the ſame time with the hind leg on the ſame ſide: inſtead of which, in trotting the fore leg on the ſame ſide, reſts and aſſiſts the impulſe during the whole time that the hind leg is in motion.

Connoiſſeurs aſſure us, that horſes which naturally amble, never trot; and that they are much weaker

weaker than others: in fact, colts often get this pace, more eſpecially when they are forced to go faſt, and have not as yet ſufficient ſtrength to trot or gallop: and we obſerve alſo, that the greateſt number of good horſes, which have been too much fatigued, and begin to decline, take of themſelves this pace, when they are obliged to uſe a more rapid, than that of walking.

We may then look upon this pace as a defective one, as it is not the uſual one, and only natural to a ſmall number of horſes, which horſes are generally weaker than others; and even thoſe which are ſtrongeſt, are generally worn out in leſs time than thoſe which trot and gallop: but there are ſtill two other paces, one between the amble and the gallop, and the broken amble, which weak or abuſed horſes take of themſelves, both which are much more defective than the amble. The pace between the amble and the trot, is ſomewhat of the trot and the gallop, and both proceed from long fatigue, or great weakneſs of the loins. Pack-horſes which are overloaded, begin to make uſe of this pace, in proportion as they are ill uſed; and poſt-horſes, when broken down and ſpoilt, and made to attempt to gallop, make uſe of this pace inſtead thereof.

The horſe of all animals, is, that which with great ſtature, has the greateſt proportion and elegance in every part of the body; for by comparing the horſe with thoſe animals, which are both ſuperior and inferior to him, we ſhall ſee that the aſs is ill-made, that the lion has too large a head, the ox has the legs too thin and ſhort, in proportion to the ſize of his body; that the camel is deformed, and that theſe monſtrous animals, the rhinoceros and the elephant, are only, to uſe the expreſſion, ſhapeleſs maſſes. The great length of the jaws, is the principal cauſe of this difference between the heads of quadrupedes,

quadrupedes, and of the human ſpecies; it is alſo, the moſt ignoble mark of all; yet, though the jaws of the horſe are very long, he has not, like the aſs, an air of imbecility, or of ſtupidity like the ox. The regularity of the proportions of his head, on the contrary, gives him an air of ſprightlineſs, which is well ſupported by the beauty of his cheſt. The horſe ſeems deſirous of raiſing himſelf above his ſtate of a quadrupede, by holding up his head, and in this noble attitude he looks man in the face; his eyes are lively and large, his ears well made, and of a juſt proportion, without being ſhort like thoſe of the bull, or too long like thoſe of the aſs; his mane ſuits well his head, ornaments his neck, and gives him an air of ſtrength and haughtineſs; his long buſhy tail covers, and terminates advantageouſly the extremities of his body, far different from the ſhort tails of the ſtag, the elephant, &c. and the naked tails of the aſs, the camel, the rhinoceros, &c. The tail of the horſe is formed of long, thick hair, which ſeems to come from the rump, becauſe the ſtump from which which it grows is very ſhort; he cannot raiſe his tail like the lion, but its ſuits him better hanging down, as he can move it ſideways; it is very uſeful to him to drive away the flies which incommode him, for though his ſkin is very hard, and is every where furniſhed with a cloſe thick coat, it is, notwithſtanding, extremely ſenſible.

The attitude of the head and neck, contributes more than all the other parts of the body, to give the horſe a noble appearance; the ſuperior part of the neck, on which the mane grows, ſhould raiſe itſelf in a ſtraight line from the withers, and in approaching the head, form a curve ſomewhat reſembling the neck of a ſwan: the inferior part ought not to have any curve, its direction ſhould be a direct line from the cheſt to the nether jaw, and a little bent forwards; if it was perpendicular, the fore-

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hand would be falſe; the ſuperior parts ſhould be ſlim, and there ſhould be but little fleſh about the mane, which ſhould be moderately ornamented with long ſleek hair, a handſome cheſt and forehand, ſhould be long and raiſed, and at the ſame time proportioned to the ſize of the horſe; when it is too long and thin, the horſes uſually throw their heads back, and when it is too ſhort and fleſhy, they puſh forwards too much, and for the head to be placed in the moſt advantageous poſition, the forehead muſt be perpendicular to the horiſon.

The head ſhould be lean and ſmall, without being too long, the ears at a moderate diſtance, ſmall, ſtraight, immoveable, narrow, thin, and well placed on the top of the head; the forehead narrow, and a little convex; the hollows filled up, the eye-lids thin, the eyes clear, lively, full of fire, rather large, and projecting in the head, the pupil large, the nether jaw thin, the noſe a little aqueline, the noſtrils large and open, the partition of the noſe, and the lips thin, the mouth of a moderate width, the withers raiſed and ſloping, the ſhoulders thin, flat, and rather confined, the back equal, even, and inſenſibly arched lengthways, and raiſed on each ſide of the ſpine, which ſhould appear indented, the flanks full and ſhort, the rump round and fleſhy, the haunches well covered with hair, the ſtump of the tail thick and firm, the fore-legs and thighs thick and fleſhy, the knee round before, the houghs large and rounded, the ſinew looſe, the joint next the foot ſmall, the fetlock not thickly covered with hair, the paſtern large, and of a middling length, the coronet rather raiſed, the hoof black, ſmooth, ſhining, and high, the quarters round, the heels wide and moderately raiſed, the frog ſmall and thin, and the ſole thick and hollow.

But there are few horſes in which all this aſſemblage of perfection is to be found: the eyes are ſub-

ſubject to many complaints, which are ſometimes difficult to be known. In a healthy eye, we ought to ſee through the comea two or three ſpots of the colour of ſoot, above the pupil: for to ſee theſe ſpots, the comea muſt be clear, clean, and tranſparent; if it appears double, or of a bad colour, the eye is not good: a ſmall, long, and ſtraight pupil, encompaſſed with a white circle, is alſo a bad ſign; and when it is of a blewiſh-green colour, the eye is certainly bad, and the ſight dull.

I ſhall at preſent only add ſome remarks, by which, as well as by the preceding, a judgment may be formed of the principle perfections or imperfections of an horſe. It is very eaſy to judge of the natural and actual ſtate of the animal by the motion of his ears, when he walks, he ſhould project forwards the points of his ears; a jaded horſe carries his ears low; thoſe which are ſpirited and miſchievous, alternately carry one of their ears forwards and one backwards: they all carry their ears on that ſide from which they hear any noiſe, and when any one ſtrikes them on the back, or on the rump, they turn their ears back. Horſes who have the eyes deep ſunk in the head, or one ſmaller than the other, have uſually a bad ſight; thoſe who have the mouth dry, are not of ſo healthy a temperament as thoſe which have the mouth moiſt, and make the bridle frothy. A ſaddle horſe ought to have the ſhoulders flat, moveable, and not very fleſhy; the draft horſe, on the contrary, ſhould have them flat, round, and brawney: if, notwithſtanding, the ſhoulders of a ſaddle horſe are too thin, and the bones ſhew themſelves through the ſkin, it is a defect which ſhews the ſhoulders are not free, and conſequently the horſe cannot bear fatigue. Another fault of a ſaddle horſe is, to have the cheſt project too forward, and the fore legs drawn too much back, becauſe he is apt to reſt on the hand in gallopping, and even to ſtumble

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and fall: the length of the legs ſhould be proportionable to the height of the horſe; when the fore legs are too long he is not ſure footed, if they are too ſhort, he is too heavy in the hand: it is a remark that mares are more liable than horſes to be ſhort-legged, and that horſes in general have the legs thicker than mares or geldings.

One of the moſt important things to be known, is the age of the horſe: it is from the teeth that we obtain the moſt certain knowledge of their age; the horſe has forty; twenty-four grinders, four eye teeth, and twelve inciſive teeth; mares have no eye teeth, or if they have them they are very ſhort: the grinders are no ways inſtrumental to the knowledge of their age, we form our judgment from the front and eye teeth. The twelve front teeth begin to ſhew themſelves fifteen days after the birth of the foal, theſe firſt teeth are round, ſhort, not ſtrong, and drop out at different times in order to make room for others: at two years and a half the four front middle teeth drop out the firſt, two at top and two at bottom; a year after four others fall out, one on each ſide of thoſe which are already replaced; at about four years and a half, four others drop out, always on the ſide of thoſe which have been replaced, theſe four laſt milk teeth are replaced by four others, which do not grow near ſo faſt as thoſe which replaced the firſt eight; and theſe four laſt teeth which are called the wedges, and which replace the four laſt milk teeth, are thoſe by which we know the age of an horſe; theſe are eaſily known, ſince they are the third as well at top as at bottom, beginning to count from the middle of the extremity of the jaw; theſe teeth are hollow and have a black mark in their concavity; at four years and a half, or five years old, they ſcarcely project beyond the gums, and the hollow is plainly ſeen; at ſix years and a half it begins to fill up, the mark alſo begins to diminiſh

miniſh and grow narrower, and ſo continues till ſeven years and a half or eight years, when the hollow is entirely filled up and the black mark effaced: after the animal has attained eight years, as theſe teeth do not give further information of the age, we generally judge of the eye teeth or tuſks; theſe four teeth are placed at the ſide of thoſe which I have juſt now been ſpeaking of; the eye teeth, as well as the grinders, are not preceded by others which fall out; thoſe of the interior jaw uſually come out firſt at three years and a half, and the two of the upper jaw at four years, and till they are ſix years old they are very ſharp; at ten years old the upper ones appear already blunt, worn and long, becauſe they are bare, the gum wearing away with age, and the more they are worn away the more aged the horſe is: from ten till thirteen or fourteen years, there is hardly any indication of the age, but then ſome hairs on the eye-brows begin to grow white, but this indication is equivocal, ſince it has been remarked that horſes engendered from old ſtallions and old mares have the hair white on the eye brows at ten years old. There are alſo horſes whoſe teeth are ſo hard that they do not wear, and upon which the black mark ſubſiſts, and is never effaced; which, and others which have the mark in the mouth as long as they live, than of theſe it is eaſily known by the length of the eye teeth, it has alſo been remarked that there are more ſuch mares than horſes. We may alſo know, though with leſs preciſion, the age of a horſe by the ridges of the palate, which are effaced in proportion to his age.

From the age of two years, or two years and a half, the horſe is in a ſtate to engender, and mares, like all other females, are ſtill more forward than the males; but theſe young horſes produce only colts ill-ſhaped, or of bad conſtitutions: the horſe ſhould at leaſt be four years, or four years and a half,

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before he is allowed the uſe of the mare, and draught and large horſes not ſo early. Theſe are generally ſooner formed than delicate ones; and it is neceſſary to wait ſix, and ſometimes ſeven years, for the beautiful Spaniſh ſtallions; the mares may be a year younger; they are uſually proud in the ſpring, from the end of March to the end of June, but they are moſt fit to receive the male for about fifteen days or three weeks, and it is neceſſary to be particularly attentive to this period for giving them the ſtallion: he ſhould be choſen with care, handſome, well-made, his cheſt projecting, vigorous, perfectly healthy, ſound all over, and, above all, of a good breed. To have handſome ſaddle-horſes, ſlim and well-made foreign ſtallions, Arabian, Turkiſh, Barbary, and Andaluſian horſes are thoſe which ſhould be preferred to all others; and even, notwithſtanding their faults, the Engliſh horſes may be ſucceſsfully made uſe of, becauſe theſe horſes originally come from the above-mentioned breed, and are not much degenerated; the food being excellent in England, where they are alſo very careful in keeping up the breed: the ſtallions of Italy, but eſpecially thoſe of Naples, are as good, and have the advantage of producing the handſomeſt ſaddle-horſes, when coupled with genteel mares, and handſome coach-horſes when with mares full of fleſh, and of a large ſtature. It is pretended that in France, in England, &c. the Arabian and Barbary horſes uſually engender horſes larger than themſelves, and that, on the contrary, the Spaniſh horſes produce a ſmaller breed. To have handſome coach-horſes we ſhould make uſe of Neapolitan and Daniſh ſtallions, or horſes from ſome parts of Germany or Holland, ſuch as from Holſtein and Frizeland. The ſtallions ſhould be of good ſize, that is to ſay, about fifteen hands high for ſaddle-horſes, and fifteen hands and a half at leaſt for coach-horſes: a ſtallion ſhould

have a good coat, black as jet, or of a fine grey, bay, cheſnut, or yellow dun colour, with a black ſtreak, the mane and extremities black; all the hairs which ſeem in their colour as if they were waſhed or ill-coloured, ſhould be extirpated from the whole race, as well as thoſe which have the ends white. With exceeding good exterior, a ſtallion ſhould alſo have the beſt interior, qualities, ſuch as courage, docility, ſpirit, agility, ſenſibility in the mouth, freedom in his ſhoulders; he ſhould be ſure-footed, ſupple in the haunches, and have a ſpring in the whole body, but above all in the houghs, and ſhould have been well broke and trained. The horſe, above all other animals, is the moſt noticed, and it is remarked, that he communicates by generation almoſt all his good and bad qualities, both natural and acquired. A horſe, naturally moroſe, gloomy, ſtubborn, &c. produces colts of the ſame diſpoſition; and as the defects of conformation, as well as the vices of the humours, perpetuate with ſtill more certainty then the natural qualities, great care muſt be taken to exclude from the whole ſtud all deformed, glandered, broken-winded, or mad horſes.

In theſe climates the mare contributes leſs than the ſtallion to the beauty of the colt, but ſhe contributes perhaps more to his temperament and form; thus it is neceſſary, that the mares ſhould be ſtrong-bodied and good nurſes, in order to breed beautiful horſes. The Spaniſh and Italian mares are preferred, and for coach-horſes the Engliſh mares. The mares of all countries may, nevertheleſs, produce handſome horſes, provided they are themſelves well made and of a good breed; for if they are engendered from a bad horſe, the colts which they produce will frequently prove bad horſes. In this ſpecies of animals, as well as in the human race, the deſcendants frequently

quently reſemble their paternal or maternal anceſtors; only it appears, that in horſes the female does not contribute quite ſo much to generation as in the human ſpecies, where the ſon oftener reſembles the mother, than the foal does the mare; and when the foal reſembles the mare which has produced it, it is uſually in the fore parts of the body, and in the head, and neck.

Again, in order to judge well of the reſemblance of children to their parents, the compariſon ſhould not be made in their youth; we ought to wait till they are arrived at manhood, when the compariſon would be more certain and ſtriking. There happens at the time of puberty, a ſudden and quick expanſion of the parts, which uſually changes the features, make, ſize, attitude of the limbs, &c. the face lengthens, the noſe becomes longer and wider, the jaw-bone projects forward, the ſtature increaſes, the legs lengthen, and frequently become bowed or thin; inſomuch, that the phyſiognomy and carriage of the body, are ſometimes ſo different from what they were, that it may be poſſible to miſtake, after puberty at leaſt, at the firſt glance of the eye, a perſon whom we have known perfectly well before that period, but have not ſeen ſince. Till after that time, then, we ought not to compare the child with its parents if we would judge accurately of the reſemblance; and ſometimes we ſhall find that in the human ſpecies, the ſon frequently reſembles his father, and the daughter her mother; that more frequently the child reſembles both at once; that ſometimes children reſemble the grand-fathers or grand-mothers, and ſometimes the uncles and aunts; that almoſt always the children of the ſame father and mother are more like each other, than they are like their parents, and that all have ſome family-likeneſs.

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In horſes, as the male contributes more to generation than the female, as has already been obſerved, the mare produces colts which are frequently in every reſpect like the ſtallion, or which always reſemble their grand-fathers; and when the brood-mare has herſelf been got by a bad horſe, it frequently happens that, though ſhe had a beautiful ſtallion, and is handſome herſelf, ſhe ſhall yet produce a foal which, however in appearance handſome and well made in its early youth, degenerates as it grows older; while a well-bred mare produces foals, which though at firſt they have an unfavourable appearance, grow handſomer as they advance in age.

Thus, the obſervations which have been made on the produce of good mares, and which ſeem all to concur in proving that in horſes the male has greater influence than the female on their progeny, do not appear to be ſufficient to eſtabliſh this fact in an indiſputable manner. It is not impoſſible, but that theſe obſervations may ſubſiſt, and yet in general the mare may contribute as much as the horſe to the production of their iſſue: it does not appear to me aſtoniſhing that the ſtallions, always choſen out of a great number of horſes, generally brought from warm climates, high-fed, kept and managed with great care, ſhould have the ſway in generation over common mares, born in a cold climate, and frequently obliged to labour; and as from obſervations drawn from ſtuds, there is always more or leſs of this ſuperiority of the ſtallion over the mare, we may judge that this is the ſole reaſon why they are true and conſtant. But at the ſame time, they may alſo hold as true that of the beautiful mares of warm countries which have been covered by common horſes, would perhaps have greater influence than them on their progeny, and that if the ſpecies of

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horſes, as well as the human ſpecies, there might be an equality in the influence of the male and female in their young; this appears natural, and the more probable, as it has been remarked in ſtuds that an equal number of male and female foals are bred, which prove that at leaſt as far as regards the ſex, the female has equal influence.

It has been remarked, that ſtuds ſituated in dry and light countries produce good-tempered, ſwift, and vigorous horſes, with nervous legs and hard hoofs; while on the other hand, thoſe which are bred in damp places, and in fat paſturage, have generally the head large and heavy, the legs thick, the hoofs ſoft, and the feet flat. This difference ariſet from the climate and food, which may be eaſily underſtood; but, what is more difficult to be comprehended, and what is ſtill more eſſential than any thing that has been ſaid, is, the neceſſity of always croſſing or mixing the breed, if we would prevent their degenerating.

There is in nature, a general prototype of each ſpecies, from which each individual is modelled, but which ſeems in procreation to be debaſed or improved, according to its circumſtances; inſomuch, that in relation to certain qualities, there is a ſtrange variety in the appearance of individuals, and at the ſame time, a conſtant reſemblance, which appears admirable, in the whole ſpecies. The firſt animal, the firſt horſe, for example, has been the exterior model, and the interior mould, from which all horſes that have been foaled, all which exiſt, or ſhall exiſt, have been formed; but this mode, of which we are only acquainted with copies, may have changed, or arrived at perfection, by multiplying, or communicating its form. The original form ſubſiſts entire in each individual; but though there are millions of them, yet none of theſe individuals are

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alike in every thing to other individuals, and conſequently to the model from which they are formed. This difference, which proves how far Nature is from making any thing abſolutely perfect, and how well ſhe knows how to ſhade her works, is found in the human ſpecies, in all animals, in all vegetables, and in a word, in all beings which are re-produced; and what is ſingular, is, that it appears that the model of what is handſome and good, is diſperſed throughout all the earth, and that in each climate there remains only a portion thereof, which perpetually degenerates unleſs it is re-united with another portion, taken from a diſtant country; ſo that, to have good corn, beautiful flowers, &c. it is neceſſary to change the ſeeds, and never ſow them in the ſame ground where they grew; and alſo to have handſome horſes, good dogs, &c. it is proper to give to the females of the country, foreign males, and vice verſa to the males of the country, foreign females. Without this, corn, flowers, and animals will degenerate, or rather take ſo ſtrong a tincture of the climate, that it will preſide over the form, and ſeem to baſtardize it: the form remains, but diſfigured in all the lines which are not eſſential thereto; by mixing, on the contrary, the kinds, and above all, by renewing them by a foreign ſpecies, the forms ſeems to become more perfect.

I ſhall not here give the general reaſons of theſe effects, but indicate the conjectures which preſent themſelves at the firſt glance of the eye. We know from experience, that animals or vegetables tranſplanted from a diſtant climate, frequently degenerate, and ſometimes are improved in a ſhort time. It is eaſy to conceive, that what produces this effect is the difference of the climate, and of the food; the influence of theſe two cauſes will at length render theſe animals exempt from, or ſuſceptible of, certain affections,

fections, and certain diſorders; their temperament will change by little; the unfolding of the form, which depends partly on the food and the quality of the humours, muſt therefore alſo change in their progeny. This change is indeed almoſt imperceptible in the firſt generation, becauſe the two animals, male and female, ſuppoſed to be the ſtock of this race, had taken their conſiſtence and form before they were brought from their own country; and becauſe the new climate and new food may indeed change their temperament, but cannot have influence enough on the ſolid parts and organs to alter the form, eſpecially if the growth of their bodies was entirely completed, and conſequently the firſt generation will be no ways changed, the firſt progeny of theſe animals will not degenerate, the impreſſion of the form will be pure, and it will not deviate from the original ſtock, at the time of its birth: but the young animal will feel, at a tender and weak age, the influence of the climate; it will have more impreſſion on it than it could have on its father and mother: that of the food will alſo be greater, and act upon the organical parts during the time of its growth: change a little the original form and produce therein, thoſe ſeeds of defects which afterwards manifeſt themſelves in a very conſpicuous manner in the ſecond generation, where the progeny has not only its own defects, that is to ſay, thoſe which ariſe from its growth, but alſo the vices of the ſecond ſtock, which will ſhew themſelves with more; and at length, in the third generation, the defects of the ſecond and the third breed, which proceed from the influence of the climate and food, combined with thoſe of influence on the actual growth, will become ſo viſible, that the character of the firſt ſtock will be effaced. Theſe animals of foreign race will be no longer foreign, but in every reſpect reſemble thoſe of the country. Spaniſh or Barbary horſes,

horſes, from which ſo many generations ſpring, become, in France, French horſes, frequently in the ſecond generation, and always in the third: we are therefore obliged to croſs the breed inſtead of preſerving it, and renew the race at each generation, by giving the horſes of Barbary, or Spain, to the mares of the country; and what is more ſingular, this renewal of the race, which is only done in part, produces much better effects than if the renewal was entire. A Spaniſh horſe and mare in a foreign country do not produce together ſuch handſome horſes, as thoſe which are bred from the ſame Spaniſh horſes with a mare of the country; which is eaſy to be conceived, if attention is but given to the amendment of natural defects which will be produced when a male and female of different countries are put together. Each climate, by its influence, and by that of its food, gives a certain conformation, which offends itſelf in ſome ſuperfluity, or in ſome defect. In a warm climate, there will be in exceſs what will be deficient in a cold climate, and reciprocally; in ſuch a manner as to make amends for all, when we join together animals of thoſe oppoſite climates: and as the moſt perfect thing in nature is that which has the feweſt defects, as the moſt perfect beauties are thoſe that have the feweſt deformities, ſo the produce of two animals, whoſe defects exactly counter-balance each other, will be the moſt perfect production of its ſpecies; they counter-balance one another the better, in proportion to the diſtance between the countries the animals matched together were bred in; or rather the greater or leſs difference in the reſpective climates, the compound that reſults therefrom is the more perfect, the more oppoſite the exceſſes or defects of the conſtitution of the male are to the defects or exceſſes of the temperament of the female. Thus the breed is always improved by matching the mares with

with foreign horſes, and, on the contrary, much debaſed by ſuffering horſes of the ſame race to breed together; for they infallibly degenerate in a very little time.

The climate and food have not ſo much influence on the human ſpecies as on animals, and the reaſon is plain: man can defend himſelf better than animals from the intemperance of climate; he is lodged and cloathed ſuitably to the ſeaſons; in his food alſo there is more variety, and conſequently it cannot influence all individuals in the ſame manner. The defects or exceſſes which ariſe from theſe two cauſes, and which are ſo conſtantly and ſenſibly felt in animals, aremuch leſs ſo in men. Beſides, as there have been frequent migrations, as nations are mixed, and great numbers travel and are diſperſed every where, it is no wonder that the human race ſhould appear leſs ſubject to the influence of climate, and that there ſhould be men ſtrong, and well-made, men even of genius, in all countries. Nevertheleſs, we may believe from experience much farther back than memory can trace, that men formerly knew the misfortunes which reſulted from alliance with the ſame blood; ſince, in the moſt unciviliſed nations, it has rarely been permitted for the brother to marry the ſiſter. This cuſtom, which is among us a divine law, and which is practiſed by other nations from political views only, is perhaps grounded on this obſervation. Policy is not extended in ſo general and abſolute a manner, unleſs ſupported by phyſical principles: but if men had once known by experience, that their race degenerates, whenever they endeavour to preſerve it without mixture in the ſame family, they would have looked upon alliances with other families as a law of nature, and agreed in not ſuffering a mixture of blood among their children. In ſhort, from analogy it may be preſumed, that in

moſt climates men degenerate, as well as animals, after a certain number of generations.

Another influence of the climate and food is, the variety of colours in the coats of animals: thoſe which are wild, and live in the ſame climate, are of the ſame colour, which becomes a little lighter, or a little darker, in the different ſeaſons of the year; on the contrary, thoſe which live in different climates are of different colours; and domeſtic animals vary ſo much, that there are horſes, dogs, &c. of all colours. The injuries of the climate always the ſame, the food always the ſame, produce, in wild animals, this uniformity. The care of man, the comforts of ſhelter, the variety of food, efface and vary the colour in domeſtic animals, as does alſo the mixture of foreign races when no care has been taken to aſſort the colours of the male and female, which ſometimes produces beautiful ſingularities, as we ſee in pied horſes, where the black and the white are ſo whimſically mixed with each other that they do not ſeem the work of nature, but rather the fancy of a painter.

In the coupling of horſes the colour and height ſhould be attended to; the ſhapes ſhould be contraſted, the race ſhould be mixed with oppoſite climates, and horſes and mares bred in the ſame ſtud ſhould never be coupled together: all theſe are neceſſary cautions, and there are ſtill ſome others not to be neglected; for example, brood-mares ought never to be docked, becauſe, being unable to defend themſelves from the flies, they are more tormented by them than thoſe which have their tails; and the continual agitation which the ſtings of theſe inſects occaſion, diminiſhes the quantity of their milk, which has great influence on the temperament and ſize of the colt, which in every reſpect will be more vigorous as the mother is more capable of

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nurſing it. It is neceſſary therefore to have only brood-mares, ſuch as have always been kept at graſs, and have never been hard-worked; mares which have always been kept in ſtables on dry food, and are afterwards put to graſs, do not immediately conceive; they muſt have time to accuſtom themſelves to this new food.

Although the uſual ſeaſon for the mare to be proud, is from the beginning of April to the end of June, yet it frequently happens, that among a great number, ſome are ſo before that time: it would be well to let this affection paſs off without ſuffering them to be covered by a ſtallion, becauſe the colt in ſuch caſe being foaled in winter, muſt ſuffer from the intemperance of the ſeaſon, and can only ſuck a bad, poor milk: and alſo, if a mare does not become proud till the month of June is expired, ſhe ſhould not be ſuffered to take horſe, becauſe the colt, being foaled in ſummer, cannot acquire ſtrength enough to reſiſt the injuries of the enſuing winter.

Many people, inſtead of conducting the ſtallion to the mare, let him looſe in a park, where a number of mares are kept, and leave him at liberty to chuſe for himſelf thoſe which have occaſion for him, and to ſatisfy them according to his fancy: this method is good for the mares, and they will even breed with more certainty than in any other manner; but the ſtallion is more hurt in ſix weeks by this method than he would be otherwiſe in as many years.

As ſoon as the mares are with foal, and their bellies begin to grow heavy, they muſt be ſeparated from thoſe which are not ſo, leſt they ſhould hurt them: they uſually go with foal eleven months and ſome days: they drop their foal ſtanding upright, inſtead of which, almoſt all other quadrupedes lie down: thoſe which foal with difficulty are aſſiſted with the hand to place the colt in a proper ſituation;

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and ſometimes, when it is dead, they make uſe of ropes. The colt generally preſents itſelf with the head firſt, as all other ſpecies of animals; it ruptures its own membranes in the birth, and the abundant waters contained therein flow out; at the ſame time there is voided one or more ſolid pieces of fleſh formed by the thick liquor of the allentoiſe: this piece, which the ancients have called the hippomanes of the foal, is not, as they ſay, a piece of fleſh faſtened to its head; it is, on the contrary, ſeparated by the membrane amnios. The mare licks the foal after its birth, but ſhe does not meddle with the hippomanes; and the ancients are again miſtaken, when they aſſure us, that ſhe devours it immediately.

It is the uſual cuſtom to have the mare covered nine days after ſhe has foaled: this is done not to loſe time, and to make all we can from the ſtud; notwithſtanding it is certain, that the mare having a young colt, and that which ſhe is big with to nouriſh at the ſame time, her ſtrength is divided, and ſhe is not able to give them ſo much nouriſhment as if ſhe had only the one or the other to provide for: it would be better, in order to have excellent horſes, to let the mares be covered but once in two years; they would laſt longer, and would not be ſo liable to drop their foal in common ſtuds: all the mares which have been covered, ſeldom produce every year: it is a great thing when in the ſame year half, or two thirds, produce colts.

The mares, when with foal, can bear to be covered, though there never is any freſh conception: they uſually breed till the age of fourteen or fifteen years, and the moſt vigorous longer than eighteen years. Horſes, when they have been taken great care of, may engender till they are twenty years old or upward; and the ſame remark has been made of theſe animals as of men, viz. that thoſe which have

have begun early, alſo finiſh breeding early; for clumſy, large horſes, which ſooner arrive at their growth than delicate ones, and which are uſed as ſtallions at four years old, do not laſt ſo long, and are frequently incapable of engendering before they are fifteen years of age.

The duration of the life of horſes, is like that of every other ſpecies of animals, in proportion to the length of the time of their growth. Man, who is above fourteen years in growing, lives ſix or ſeven times as long, that is to ſay, ninety or a hundred years. The horſe, who attains his full growth in four years, lives ſix or ſeven times as long, that is to ſay, twenty-five or thirty years. There are ſo few examples to contradict this rule, that we ſhould not even regard them as exceptions from which we may draw any precedents; and as robuſt horſes are at their entire growth in leſs time than delicate ones, they alſo live leſs time, and at fifteen years of age are old.

It may be ſeen with a glance of the eye, that in horſes, as well as in the greateſt part of other quadrupedes, the growth of the hinder parts is greater than thoſe of the anterior parts; whilſt in man, the inferior parts grow leſs than the ſuperior: for in a child, the thighs and legs are, in proportion to the body, much leſs than thoſe of an adult; on the contrary, the hind legs of the colt are ſo long, that he can touch his head with the hind foot, but a grown horſe cannot do the ſame. This difference proceeds leſs from the inequality of the whole growth of the anterior and poſterior parts, than from the inequality of the fore and hind feet, which is conſtantly the caſe through all Nature, and moſt ſenſible in quadrupedes; for in man, the feet are larger than the hands, and are alſo ſooner formed; and in the horſe in which the foot forms great part of the hind leg, being compoſed only of the bones belonging to the tarſus,

tarſus, metatarſus, &c. it is not aſtoniſhing that this foot ſhould be more and ſooner extended than the fore legs, the whole inferior part of which reſembles the hands, being only compoſed of the carpal, metacarpal bones, &c. When a colt is juſt foaled, this difference is readily remarked; the fore-legs compared with the hind ones, appear, and in fact, are, much ſhorter than they are in the ſequel, and beſides the thickneſs which the body acquires, though independant of the proportions of the growth in length, occaſions, nevertheleſs, more diſtance between the hind legs and the head, and conſequently contributes to hinder the horſe from reaching thereto, when he has arrived at his full growth.

In all animals, each ſpecies differs according to the difference of climate; and the general reſult of this variety, forms and conſtitutes the different kinds, of which, we can only ſeize the moſt remarkable, thoſe which differ greatly from each other, neglecting all the intermediate ſhades, which here, as in every thing elſe, are infinite. We have even favoured the number and confuſion, by favouring the mixtute of theſe breeds; and we have alſo inverted Nature by bringing into theſe climates, the horſes of Africa or Aſia, and have ſo much changed the primitive race of this country, by introducing horſes of all countries, that they are not to be known, there only remaining ſome ſlight traces, produced by the actual influence of the climate. Theſe traces would be much ſtronger, and the difference would be much greater, if the race of each climate were preſerved without mixture; the ſmall differences would be leſs ſhaded, and fewer in number, but there would be a certain number of great varieties ſtrongly characteriſed, that all the world would eaſily diſtinguiſh; inſtead of which, cuſtom, and even a long experience are at preſent, neceſſary to know the horſes of different countries: in this caſe, we have only the knowledge

ledge which we have drawn from the accounts of different travellers, from the works of the ableſt riding maſters, ſuch as Newcaſtle, Garſault, Gueriniere, &c. and from ſome remarks that Pignerolles, maſter of horſe to the king of France, and preſident of the academy of Angiers, has had the goodneſs to communicate.

The Arabian horſes are the handſomeſt that are known in Europe, they are larger and more plump than thoſe of Barbary, and equally well-ſhaped, but as they are not often brought into this country, riding-maſters are not able to give an exact account of their perfections and defects.

The horſes of Barbary are more common, they have the cheſt long and thin, and but ſcantily covered with hair, and well divided from the withers; the head handſome and ſmall, the ears handſome and well placed, the ſhoulders thin and flat, the withers thin and well placed, the loins ſhort and ſtraight, the flanks and ſides round without too much belly, the haunches thin, the buttocks generally long, and the tail placed rather high; the thighs well formed, and ſeldom flat; the legs handſome, well made, and without hair; the nerves very looſe, the foot well made, but frequently the paſtern long; they are of all colours, but moſt commonly grey. The horſes of Barbary are moſt commonly negligent in their paces, and muſt be often reminded: they are very ſwift and ſtrong, very light, and very fit for hunting. Theſe horſes ſeem the moſt proper to breed from; it were only to bewiſhed that they were of larger ſtature, they ſeldom exceeding four feet eight inches high: it is confirmed by experience, that in France, in England, &c. they beget colts larger than themſelves. It is ſaid that among the Barbary horſes, thoſe of the kingdom of Morocco are the beſt; next, thoſe of the mountains; the reſt of the horſes of Mauritania, are of a far inferior quality, as well as thoſe of Turkey, Perſia, and Armenia: all the

the horſes of warm countries have the hair ſhorter than others. The Turkiſh horſes are not ſo well-proportioned as thoſe of Barbary: they have commonly the cheſt ſlender, the body long, and the legs too thin; they will, however, travel a great way, and are long winded: this is not ſurpriſing, if we do but conſider, that in warm countries, the bones of animals are harder than in cold climates; and it is for this reaſon, that they have more ſtrength in the legs.

The Spaniſh horſes, which hold the ſecond rank after thoſe of Barbary, have the cheſt long, thick, and hairy; the head rather large, the ears long, but well placed; the eyes full of fire, a noble and ſtately air, the ſhoulders thick, and the breaſt large, the loins frequently rather low, the ribs round, and frequently too much belly; the buttocks uſually round and large, though ſome have them rather long; the legs thin, and free from hair, are ſometimes rather long like thoſe of Barbary, and the foot rather lengthened, like that of a mule, and frequently the heel too high. Spaniſh horſes of a handſome breed, are plump, well-coated, and low of ſtature; they alſo uſe much motion in their carriage, and have great ſuppleneſs, ſpirit, and pride; their hair is uſually black, or of a bay cheſnut colour, though there are ſome of all colours, and it is but ſeldom that they have white legs and noſes. The Spaniards, who have an averſion to theſe marks, never breed from horſes that have them, chuſing only a ſtar in the forehead. But of theſe prejudices, are perhaps equally ill founded, ſince there are exceeding good horſes with all kinds of marks, and even excellent horſes all of one colour; this ſmall difference in the coat of a horſe, does not in any manner depend on his qualities, or his interior conſtitution, ſince it really depends on an exterior quality, and

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that ſo ſuperficial, that by a ſlight ſcratch on the ſkin a white ſpot is produced. In every other reſpect the Spaniſh horſes are all marked in the thigh with the mark of the ſtud where they were bred; they are not commonly of large ſtature, though there are ſome four feet nine or ten inches in height: thoſe of Upper Andalouſia are reckoned to be the beſt, though they are apt to have the head too long; but this defect is excuſed in favour of their excellent qualities: they are courageous, obedient, graceful, haughty, and more ſupple than thoſe of Barbary, for which advantages they are preferred to all other horſes in the world, for war, for ſhew, and for the manege.

The handſomeſt Engliſh horſes have in their conformation great reſemblance to thoſe of Arabia and Barbary, from which, in fact, they are bred: they have, notwithſtanding, the head larger, but well-made, the ears longer, but well-placed. By the ears alone an Engliſh horſe may be known from a Barbary horſe; but the great difference is in their ſtature. Engliſh horſes have good coats, and are much larger; they are frequently five feet high and above; they are of all colours, and have all kinds of marks; they are generally ſtrong, vigorous, bold, capable of great fatigue, excellent for hunting and courſing, but they want that grace and ſuppleneſs, and are not flee in the ſhoulders.

The horſes of Italy were formerly much handſomer than they are at preſent, becauſe the breed for ſome time has been neglected, notwithſtanding there are ſtill ſome handſome Neapolitan horſes, eſpecially draught-horſes; but, in general, they have the head large and the cheſt thick; they are untractable, and, conſequently, not eaſily managed, theſe defects are compenſated by their noble form, their ſtatelineſs, and the beauty of their motions;

they are excellent for the harneſs, and are fond of ſtate.

The Daniſh horſes are ſo handſome in their make, and ſo beautiful in their coats, that they are preferred to all others for putting into carriages: ſome of them are perfectly moulded, but the number is but ſmall, for the conformation of theſe horſes is ſeldom regular: moſt have the cheſt thick, the ſhoulders large, the loins long and low, the buttocks too narrow for the thickneſs of the fore-parts; but they are all graceful in their motions, and in general very good for war, and for ſtate: they are of all colours, and even of ſome ſingular ones, as pied; and horſes ſpotted like tigers are found no where but in Denmark.

In Germany we meet with very handſome horſes, but they are generally heavy, and ſhort-breathed, though chiefly bred from Turkiſh and Barbary horſes, of which they keep up the breed, as well as Spaniſh and Italian horſes; for this reaſon they are not ſwift enough for courſing or hunting, whilſt the Hungarian, Tranſilvanian, &c. are, on the contrary, light and good courſers. The Huſſars and Hungarians ſplit their noſtrils with a view, they ſay, of giving them more breath, and alſo to hinder their neighing in battle: they pretend that horſes which have their noſtrils ſplit cannot neigh. I have not had it in my power to be convinced of this fact; but it appears to me, that their neighing muſt be weaker. It is remarked, that the Hungarian, Croatian, and Poliſh horſes have the mark in their mouths during life. The horſes of Holland are very good for coach-horſes: the beſt come from the province of Friezland: there are alſo ſome very good ones in the provinces of Bergues and Juliers. The Flemiſh horſes are greatly inferior to thoſe of Holland: they have almoſt all large heads, flat feet, and are ſubject to humours in the eyes; and theſe

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two laſt defects are eſſential ones in coach-horſes. In France there are horſes of all kinds, but very few handſome ones. The beſt ſaddle-horſes come from the Limouſin, and reſemble much thoſe of Barbary, and like them are excellent for hunting, but they are ſlow in their growth, and require great care while young, and muſt not be ridden till they are eight years old: there are alſo ſome excellent fillies in Auverge, in Partou, and in the Moroant in Burgundy; but next to the Limouſin, Normandy furniſhes the handſomeſt horſes; they are not ſo good for hunting, but are better for war; they have thicker coats, and ſooner attain their full growth. There are many coach-horſes brought from Lower Normandy to the Continent; they are lighter than thoſe of Holland. Franche-Compte, and the country round Boulogne, furniſh very good draught-horſes. In general, the French horſes are defective, in having their ſhoulders too thick; inſtead of which, in the Barbary horſes, they are generally too narrow.

After the enumeration of theſe horſes which are beſt known to us, we ſhall mention what travellers report of horſes we are unacquainted with. There are very good horſes in iſlands of the Archipelago: thoſe of the iſland of Crete were in great reputation among the ancients for their agility and ſwiftneſs, notwithſtanding they are but little uſed even in that country, which is almoſt every where unequal, and very mountainous. The handſome horſes of theſe iſlands, and even thoſe of Barbary, are of the Arabian breed. The natural horſes of the kingdom of Morocco are much ſmaller than thoſe of Arabia, but very light and vigorous. Shaw ſays, that the breed of Egypt and Tingitania are preferable to all thoſe of the neighbouring countries; though a century ago there were good horſes all over Barbary. It is ſaid, that the excellence of theſe Barbary horſes conſiſted in their never being tired, and in their ſtanding

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ing ſtill whilſt the rider diſmounts or lets fall his bridle; they walk faſt and gallop with rapidity, but are never ſuffered to trot or amble: the inhabitants of the country look upon theſe paces as rude and ignoble. He ſays alſo, that the horſes of Egypt are ſuperior to all others for their height and beauty; but theſe Egyptian horſes, as well as the greateſt part of thoſe of Barbary, ſpring from Arabian horſes, which are, without contradiction, the firſt and the moſt beautiful horſes in the world.

According to Marmol, or rather according to Leon, the African, for Marmol has copied him almoſt word for word, the Arabian horſes are deſcended from the wild horſes of the deſarts of Arabia, of which in antient times large ſtuds were formed, which have multiplied ſo much that all Aſia, and Africa are full of them, they are ſo nimble that ſome will outſtrip the very oſtriches in their courſe. The Arabians of the deſart and the people of Lybia, breed a great number of theſe horſes for hunting, but neither uſe them in travelling or in their wars; they ſend them to paſture whilſt there is graſs for them, and when that fails, they feed them only with dates, and camel's milk, which make them nervous, nimble, and lean. They lay ſnares for the wild horſes, and eat the fleſh of the young ones, which they affirm is very delicate food. Theſe wild horſes are ſmaller than the tame ones, and are commonly aſh-coloured, though there are alſo ſome white ones, and the main and the hair of the tail is ſhort and frizled. Other travellers have given us ſome curious accounts of the Arabian horſes, of which we will only mention the principal circumſtances.

Let an Arabian be ever ſo poor, he has horſes; they uſually mount the mares, experience having taught them that they bear fatigue, hunger, and thirſt, better than horſes, they are alſo leſs vicious,

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more gentle, and do not neigh ſo often as horſes: They uſe them ſo much to be together, that they will remain ſo in great numbers for days together, left to themſelves, without doing the leaſt harm to each other. The Turks, on the contrary, do not like mares, and the Arabians ſell them the horſes, which they do not keep for ſtallions. They have long preſerved with great care the breed of their horſes; they know their generations, alliances and all their genealogy; they diſtinguiſh the breeds by different names, which they divide into three claſſes; the firſt is, that of noble horſes, of pure and ancient race on both ſides, the ſecond are of ancient race, but which have been miſ-allied; and the third kind are common horſes. Theſe are ſold at a low price; but thoſe of the firſt claſs, and even thoſe of the ſecond, among which ſome are as good as thoſe of the firſt claſs, are extremely dear. They never ſuffer the mares of the firſt noble claſs to be covered except by ſtallions of the ſame quality: they are acquainted from long experience with the whole race of their own horſes, and even with thoſe of their neighbours, and know in particular the names, ſur-names, colour of the coat, marks, &c. When they have no noble ſtallions of their own, they borrow one of a neighbour to cover their mares, giving ſome money for the uſe of him, which is done in the preſence of witneſſes who give an atteſtation ſigned and ſealed, before the ſecretary of the empire or ſome other great perſon, and the names of the mare and the horſe are alſo written down, and their whole generation ſet forth: as ſoon as the mare has foaled, the witneſſes are again called, and another atteſtation is drawn up, which contains a deſcription of the colt, with the day of its birth; theſe certificiates are what give a value to their horſes, and are given to thoſe who buy them. The loweſt price for a mare of the firſt claſs is from one hundred, to two or three hundred pounds ſterling.

ſterling. As the Arabians have only a tent for their houſe, this tent ſerves them alſo for a ſtable: the mare, colt, huſband, wife and children lie promiſcuouſly together, and the little children will lie on the body and neck of the mare and colt, without theſe animals incommoding or doing them the leaſt injury; and one would imagine that they were afraid of turning for fear of hurting them. Theſe mares are ſo accuſtomed to live in this familiarity, that they will ſuffer any kind of play. The Arabians do not beat them, they treat them kindly, talk and reaſon with them, and take great care of them, always let them walk, and never uſe the ſpur without neceſſity; whence as ſoon as they feel their flank tickled with the ſtirrup-iron, they ſet out immediately with incredible ſwiftneſs, and leap hedges and ditches, with as much agility as ſo many does; and if their rider happens to fall, they are ſo well broke that they will ſtop ſhort even in the moſt rapid gallop. All Arabian horſes are of a middling ſize, very eaſy in their manner, and rather thin than fat; they are dreſſed morning and evening regularly, with ſo much care that not the ſmalleſt ſpot is left on their ſkins; and their legs, mane, and tail are alſo waſhed, which are let grow long, and ſeldom combed, to avoid breaking the hairs. They have nothing given them to eat all day, and ſeldom are allowed to drink above two or three times; at ſunſet a bag is faſtened round their heads, in which is about half a buſhel of very clean barley. Theſe horſes therefore eat only during the night, and the bag is not taken from them till the next morning when all is eat up, and in the month of March when the graſs is tolerably high, they are turned out to paſture. At this time the mares are covered, and immediately after, cold water is thrown on their buttocks. As ſoon as the ſpring is paſt, they are taken again from paſture and have neither graſs, or oats all the reſt of the year,

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and ſtraw but ſeldom, barley being their only food. They do not fail cutting the mane of the colts as ſoon as they are a year or eighteen months old, in order to make it grow thick and long. They mount them at two years old, or two years and a half at fartheſt; till this age they put neither ſaddle nor bridle on them; and every day from morning till night all the Arabian horſes ſtand ſaddled at the door of the tent.

The breed of theſe horſes is diſperſed in Barbary, among the Moors, and even among the Negroes of the river Gambia and Senegal; the lords of the country have ſome which are of uncommon beauty. Inſtead of barley or oats, they give them maize reduced to flower which they mix with milk, when they are inclined to fatten them; and in this hot climate they ſeldom let them drink.

The Arabian horſes have filled Egypt, Turkey, and perhaps Perſia, where there were formerly conſiderable ſtuds. Mark Paul mentions one, where there were ten thouſand white mares; and he ſays, that in that province there was a great number of large nimble horſes, with the horn of the feet ſo hard that it was uſeleſs to ſhoe them.

The horſes of the Levant, as well as thoſe of Perſia, and Arabia have the frog of the foot very hard; they ſhoe them, notwithſtanding, with ſhoes ſo tight and thin, that nails may be drove through any part of them. In Turkey, in Perſia, and Arabia, the cuſtom of taking care of them and feeding them is the ſame: they make litter of their dung, which they dry firſt in the ſun to take off the ill ſmell, it afterwards is reduced into powder and a bed made with it in the ſtable or tent, four or five inches thick; this litter laſts a long time, for when it is ſoiled again it is dried in the ſun a ſecond time, and by this means it intirely loſes its diſagreeable odour.

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In Turkey there are horſes of Arabia, Tartary, and Hungary, beſides horſes of the breed of the country, which are very handſome and elegant; they they have a great deal of fire, ſwiftneſs and ſymmetry, but are little, and are eaſily over-heated. Their ſkins are ſo tender, that they cannot bear to be rubbed with a curry-comb; ſo that they are obliged to uſe a bruſh, and to waſh them. Theſe horſes, although very handſome, are much inferior, however, to thoſe of Arabia, and even thoſe of Perſia, which are, next to the Arabian, the moſt beautiful and the beſt horſes of the Eaſt. The paſture of the plains of Media, Perſepolis, Ardebil and Derbent, is excellent; and by the order of government a prodigious number of horſes are raiſed, of which the greateſt part are very handſome, and almoſt all excellent. Pietro della Valle prefers the common horſes of Perſia to the Italian horſes, and even to the moſt excellent of the kingdom of Naples: they are commonly of a middling ſize; and there are ſome very ſmall, which are equal both in goodneſs and ſtrength, and there are alſo ſome bigger than the ſaddle-horſes of England: they have the head ſmall, the neck thin, the breaſt narrow, the ears well-made and well-placed, the legs ſlim, the buttock handſome, and the hoof hard; they are docile, lively, light, bold, courageous, and capable of bearing great hardſhips; they run very ſwift, without ever ſtumbling; they are robuſt, and eaſily fed, they give them only barley mixed with ſtraw, chopped fine, in a bag put over their heads, and they are only put to graſs for about ſix weeks in the Spring. Their tails are long, and they never make geldings of them; they give them coverings to defend them from the injuries of the air, and are particularly attentive in their care of them: they manage them with a bridle only, and without ſpurs; and there are numbers of them tranſported into Turkey, but more to the Indies. Thoſe travellers who

who are ſo laviſh in their praiſes of the Perſian horſes, agree notwithſtanding in allowing that the Arabian horſes are ſuperior for their agility, courage, ſtrength and beauty, and that they are more valued even in Perſia, than the moſt beautiful horſes of the country.

The horſes bred in the Indies are not good, and thoſe which are uſed by the grandees of the country are imported from Perſia and Arabia. They give them a little hay in the day, and in the evening, they boil for them peaſe mixed with butter and ſugar, inſtead of oats or barley; this nouriſhment ſtrengthens them, and gives them ſpirits, without it they would ſoon decay, the climate being contrary to their nature. The native horſes of the country are, in general, very ſmall, there are even ſome of them ſo little, that, Tavernier ſays, the young prince of the Moguls, who was about eight years of age, uſually rode on a little horſe, very well made, the height of which did not much exceed that of a large greyhound. It ſeems, that extreme hot climates are contrary to the nature of horſes. Thoſe of the Gold Coaſt, as well as thoſe of Judea, Guinea, &c. are like thoſe of the Indies, very bad; they carry their head and neck very low; their walk is ſo tottering, that one would imagine they were always ready to fall, they would never ſtir if they were not to beat them continually, and the greateſt part of them are ſo low that the feet of the rider almoſt touch the ground; in ſhort, they are a moſt untractable creature, and only proper to ſerve for food for the negroes, who are as fond of their fleſh, as they are of that of dogs; this taſte for horſe-fleſh is therefore common to the negroes, Arabians, Tartars, and Chineſe. The Chineſe horſes are no better than thoſe of the Indies, they are weak, ſpiritleſs, ill-made, and very ſmall: thoſe of the Corea are only three feet in height. In China almoſt all the horſes are made geldings; and they are ſo timid that they cannot be made uſe of

in war, ſo that it may with propriety be ſaid that the Tartarian horſes conquered China. Theſe horſes are very fit for war, though commonly but of a moderate ſize; they are ſtrong, vigorous, ſpirited, agile, and ſwift of foot; their hoofs are hard, but the bottom of the foot is too narrow; the cheſt long and confined; the legs too long; with all theſe defects they may paſs for very good horſes, they are not eaſily tired, and gallop extremely ſwift. The Tartars live with their horſes nearly in the ſame manner as the Arabians do; when they are about ſeven or eight months old, the young children mount them, and make them walk and gallop a little way by turns; they thus break them by degrees, and oblige them to undergo long faſtings; but they never mount them for racing or hunting till they are ſix or ſeven years old, and then make them ſupport incredible fatigue, ſuch as travelling two or three days together without ſtopping, paſſing four or five without any other food than a handful of graſs every eight hours, and alſo to go twenty-four without drinking, &c. Theſe horſes which appear, and which are in reality, ſo robuſt in their own country become enfeebled, and are ſoon good for nothing when tranſported to China or the Indies; but they ſucceed better in Perſia and Turkey. The little Tartars have alſo a breed of ſmall horſes which they ſet ſuch great ſtore by, that they are not allowed to ſell them to Foreigners: theſe horſes have all the good and bad qualities of thoſe of great Tartary, which ſhews how much the ſame manners, and the ſame education, give the ſame diſpoſition to theſe animals. There are alſo in Circaſſia, and in Mingrelia, many horſes which are even handſomer than thoſe of Tartary; there are alſo found ſome handſomer horſes in the Ukraine, Valachia, Poland and Sweden; but we have no particular account of their qualities and defects.

Notwithſtanding, if we conſult the ancients on the nature and qualities of the horſes of different countries,

countries, we ſhall find, that the horſes of Greece, but above all, thoſe of Theſſalia and Epirus were held in eſteem, and were uſeful in war; that thoſe of Achaia were the largeſt ever known; that the handſomeſt of all were thoſe of Egypt, where there was a great number, and where Solomon went to buy them at a great price; that in Æthiopa the horſes ſucceeded but badly, on account of the great heat of the climate; that Arabia and Africa produced the beſt horſes, but above all the lighteſt and moſt proper for running; that thoſe of Italy were extremely good; that in Sicily, Capadocia, Syria, Armenia, Media, and Perſia there were excellent horſes, recommended for their ſwiftneſs and agility; that thoſe of Sardinia and Corve were ſmall, but lively and courageous; that thoſe of Spain reſembled thoſe of Parthia, and were excellent for war; that there were in Tranſilvania and in Valachia, horſes with ſmall heads, and large manes hanging down to the ground, buſhy tails and were very ſwift at running; that the Daniſh horſes were well made and good leapers; that thoſe of Scandinavia were ſmall, but well-made and very agile; that the Flanders horſes were ſtrong, that the Gauls furniſhed the Romans with horſes good for the ſaddle and to carry burthens; that the German horſes were ill-made and ſo bad, that no uſe was made of them; that the Swiſs had many fit for war; that the horſes of Hungary were alſo very good; and laſtly, that the Indian horſes were ſmall and weak.

From the above facts it reſults, that the Arabian have ever been, and are ſtill, the firſt horſes in the world, as well for beauty as goodneſs; that it is from them, immediately, or mediately by the means of Barbs, that the fineſt horſes in Europe, Africa, and Aſia are bred; that the climate of Arabia is perhaps the true climate for horſes, and the beſt of all climates, becauſe, inſtead of mixing the breed by

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any foreign breed, they take care to preſerve them in all their purity; that if the climate is not of itſelf the beſt for horſes, the Arabs have endeavoured to render it ſuch by the care they have taken, from time immemorial, to ennoble their breed by putting together only the moſt beautiful individuals, and of the firſt quality; that by this attention, purſued for ages, they have been able to improve the ſpecies beyond what nature alone would have done in the moſt favourable climate. We may alſo conclude, that warm climates rather than cold, but, above all dry countries, are thoſe which agree beſt with the nature of this animal; that, in general, ſmall horſes are better than large ones; that care is as neceſſary for them as food; that familiarity and careſſes will do more with them than force and chaſtiſement; that the horſes of warm countries have the bones, the hoof, and the muſcles, harder than thoſe of our climate; that although heat agrees better than cold with theſe animals, yet exceſſive heat will not agree with them; laſtly, that their habit and nature depend almoſt entirely on the climate, food, care, and education.

In Perſia, Arabia, and many other parts of the eaſt, it is not cuſtomary to geld horſes, as is ſo general a practice in Europe and China. This operation deprives them of much of their ſtrength, courage, and fire, but renders them gentle, quiet, and docile.

The only ſeaſons for performing it are, ſpring or autumn, great heat and cold being equally hurtful. With reſpect to age, they have different cuſtoms in different countries: in ſome places they geld horſes at ten or twelve months old; but the general and beſt cuſtom is, not to geld them till two or three years, becauſe, in not doing it till that age, they preſerve more of their maſculine qualities. Pliny ſays, that they never loſe the milk-teeth if they

they are made geldings before they have ſhed them. But this is not a fact; and it is probable that the ancients grounded this ſuppoſition merely on the analogy it bears to the falling of the horns of the ſtag, goat, &c. which, in reality, never fall when once the animal has been cut. In fact, the gelding can never engender; but we have ſometimes examples of their coupling.

All horſes, of what colour ſoever, ſhed their coat, like all other animals, covered with hair, once a year, uſually in the ſpring, and ſometimes in autumn: as they are then weaker than at other times, they ſhould have more care taken of them, and their feed ſhould be larger. There are alſo horſes which ſhed the hoof; and this uſually happens to thoſe in humid marſhy places, ſuch as Holland.

Geldings and mares neigh leſs frequently than other horſes; the voice is not ſo ſtrong, and it is ſhriller: in all kinds we may diſtinguiſh five ſorts of neighing, relative to different paſſions; the neigh of joy is underſtood by the voice beginning and ending ſharp, the horſe kicks up at the ſame time, but gently without ſtriking; the neigh of deſire, either of love or attachment, in which the horſe does not kick, and the voice is dragged to a great length, and ends with a great ſound; the neigh of anger, during which the horſe kicks violently with his foot, is ſhort and ſharp; that of fear, during which he kicks alſo, is ſcarcely longer than that of anger, the voice is hoarſe and grave, and ſeems as if it came from the noſtrils only; this neighing is ſomething like the roaring of a lion; that of pain is more like ſighing, or breathing with oppreſſion, than of neighing; it is in a grave tone of voice, and follows the alternatives of reſpiration. It has alſo been remarked, that horſes which neigh the moſt frequently with joy and deſire, are the beſt and moſt generous;

generous; that horſes in general have the voice ſtronger than mares and geldings; and that from the birth the male has the voice ſtronger than the female. At two years old, or two years and a half, that is, at the age of puberty, the voice of males and females becomes ſtronger, both in mankind and in animals.

When the horſe is impaſſioned with love, deſire, or appetite, he ſhews his teeth and ſeems to laugh; he ſhews them alſo when he is angry, and would bite; he ſometimes puts out his tongue to lick, but leſs frequently than the ox, who licks much more than the horſe, and who notwithſtanding is leſs ſenſible to careſſes.

The horſe alſo remembers ill treatment much longer, and is ſooner rebuffed than the ox: his natural ſpirit and courage are, that when he finds more is expected from him than he is able to perform, he grows angry and will not endeavour; inſtead of which the ox, who is ſlow and idle, exerts himſelf and is more eaſily tired.

The horſe ſleeps much leſs than man; for when he is in health he does not reſt more than two or three hours together: he then gets up to eat, and when he has been too much fatigued, he lies down a ſecond time, after having eat; but in the whole he does not ſleep more than three or four hours in the twenty-four. There are even ſome horſes who never lie down, but ſleep ſtanding. It has alſo been remarked, that geldings ſleep oftener and longer than horſes.

Quadrupedes do not all drink in the ſame manner, though they are all equally obliged to ſeek with the head for the liquor, which they cannot get any other way, excepting the monkey, macaw, and ſome others that have hands, and conſequently drink like men when a vaſe, or glaſs, is given to them which they can hold; for they carry it to their mouths,

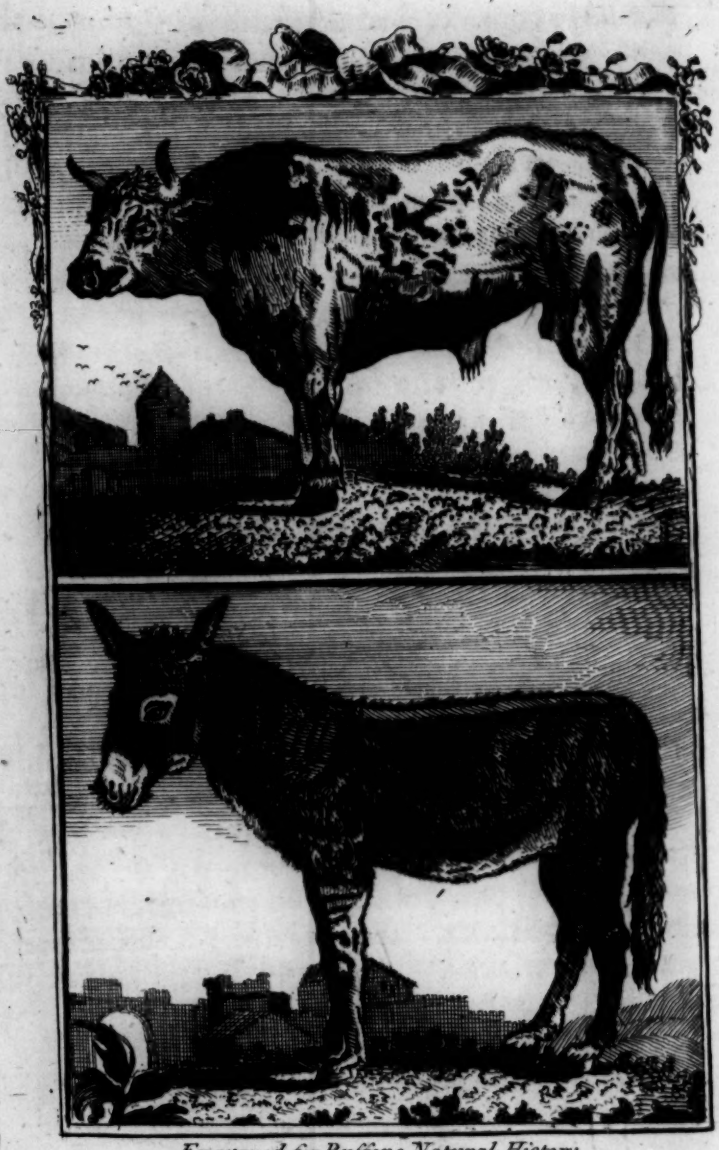
mouths, inclining the head, throwing down the liquor, and ſwallowing it by the ſimple motion of deglutition. Man uſually drinks in the ſame manner, becauſe it is moſt convenient; but he can drink many other ways, by contracting the lips to draw in the liquor, or dipping the noſe and mouth deep enough into it for the tongue to be environed therewith, and have nothing more to do than to perform the motions neceſſary for deglutition or rather by biting, to uſe the expreſſion, the liquor with the lips; or laſtly, though with more difficulty, by drawing out the tongue, widening it, and forming a kind of little cup which carries a ſmall quantity of water into the mouth. Moſt quadrupedes could alſo drink in ſeveral different ways, but, like men, they chuſe that which is moſt agreeable to them, and conſtantly follow it. The dog, whoſe mouth is very large, and the tongue long and thin, drinks lapping, that is to ſay, by licking the liquor, and forming with the tongue a kind of cup or ſcoop, which fills each time with a tolerable quantity of liquor; and this mode he prefers to that of wetting the noſe. The horſe, on the contrary, whoſe mouth is ſmall, and whoſe tongue is too ſhort and thick to ſcoop it up, and who always drinks with more avidity than he eats, dips the mouth and noſe quickly and deeply into the water which he ſwallows largely by the ſimple motion of deglutition; but even this forces him to drink without fetching his breath; whilſt the dog breathes at his eaſe while he is drinking. Horſes therefore ſhould be ſuffered to take ſeveral draughts, eſpecially after running; when reſpiration is ſhort and quick they ſhould not be ſuffered to drink the water too cold, becauſe that, independantly of the cholic, which cold water frequently occaſions, it ſometimes happens alſo, from the neceſſity they are in of dipping the noſe into the water, that they catch cold, which often lays the foundation

foundation of a diſorder called the glanders, the moſt formidable of all others to that ſpecies of animal; for it is known, that the ſeat of the glanders is in the pituitary membrane, and that it is conſequently a real cold, which cauſes an inflammation in this membrane; and travellers, who give us a detail of the maladies of horſes in warm climates, as in Arabia, Perſia, and Barbary, do not ſay that the glanders are ſo frequent there as in cold climates; and it is for this reaſon that the conjecture ariſes, that this malady is occaſioned by the coldneſs of the water, becauſe theſe animals are obliged to dip and keep the noſe and noſtrils a conſiderable time under water, which would be prevented by never giving it to them cold, and by always wiping the noſtrils after they have drank. Aſſes who fear the cold more than horſes, and who reſemble them ſo ſtrongly in the interior ſtructure, are notwithſtanding not ſo ſubject to the glanders; which may poſſibly happen from their drinking in a different manner from horſes; for, inſtead of dipping in the mouth and noſe deeply into the water, they ſcarcely touch it with their lips.

I ſhall not ſpeak of the other diſeaſes of horſes; it would ſpin out this Natural Hiſtory too much to join to the hiſtory of an animal that of its diſorders: nevertheleſs, I cannot leave the hiſtory of the horſe without regretting that the health of this uſeful animal ſhould have been hitherto abandoned to the care, and too-frequently abſurd practice, of ignorant people. The branch of phyſic, which the ancients called Veterinarion, is at preſent ſcarcely known but by name. I am perſuaded, that if ſome phyſician would turn his views this way, and make this ſtudy his principal object, he would ſoon find it anſwer his purpoſe, both with reſpect to reputation and profit: inſtead of degrading himſelf, he would render his name illuſtrious, and this branch of phyſic would

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Engraved for Buffons Natural History.

not be ſo conjectual and difficult as the other. The diet, manners, and influence of ſentiment; in a word, all cauſes being more ſimple in animals than in man, the diſeaſes ought alſo to be leſs complicated, and conſequently more eaſily to be gueſſed at and treated with more ſucceſs, without mentioning the entire liberty he would have of making experiments, and finding out new remedies, and to be able to arrive without fear, or approach to a great extent of knowledge of this kind, from which, by analogy, might alſo be drawn inferences uſeful to the art of curing mankind.

THE ASS.

IF we conſider this animal with attention, he appears only to be a horſe degenerated. The perfect ſimilitude in conformation of the brain, the lungs, the ſtomach, the inteſtinal conduit, the heart, the liver, and other viſcera, and the great reſemblance of the body, legs, feet, and the entire ſkeleton, is a ſufficient foundation for this opinion; we may alſo, attribute theſe ſlight differences, which are found between theſe two animals, to the influence of the climate, food, and the fortuitious ſucceſſion of many generations of ſmall wild horſes half degenerated, which, by little and little, have ſtill continued degenerating, and have been degraded as much as poſſible, and, have at laſt produced a new and fixed ſpecies; or, rather a ſucceſſion of individuals alike, all vitiated in the ſame manner, ſufficiently differing from a horſe, to be looked upon as another ſpecies. What appears to favour this notion is, that as horſes vary much more than aſſes in the colour of their ſkin, they are conſequently more anciently domeſtic, ſince all domeſtic animals vary much more in their colour than wild ones of the

ſame ſpecies; that the greater number of wild horſes, of which travellers ſpeak, are ſmall in their ſize, and have, like aſſes, the coat grey, and the tail naked and frizzled at the end; and, that there are wild horſes, and even domeſtic ones, which have a black ſtripe on the back, and other marks, which nearly reſemble both wild and domeſtic aſſes.

Again, if we conſider the difference of the temperament, diſpoſition, and manners; in a word, the organiſm of theſe two animals, and, above all, the impoſſibility of mixing the breed to make one common ſpecies, or even an intermediate ſpecies which may be renewed; it appears a better founded opinion, to think that theſe animals are of a ſpecies equally ancient, and originally as eſſentially different as they are at preſent; as the horſe differs materially from the aſs, in the ſmallneſs of the ſize, largeneſs of the head, length of the ears, hardneſs of the ſkin, nakedneſs of the tail, the form of the rump; and alſo, in the dimenſions of the neighbouring parts, ſuch as the voice, the appetite, manner of drinking, &c. Do the horſe and the aſs then come originally from the ſame ſtock? are they of the ſame family, or not? and have they not always been different animals?

This queſtion of which the phyſicians will find the generality, the difficulty, and conſequences, and which we have always thought it our duty to treat of in this article, becauſe it here offers itſelf for the firſt time, appertains to the production of beings neareſt to each other, and, in order to clear our doubts, it is neceſſary that we ſhould conſider their nature, under a new point of view. If, in the immenſe variety which preſents itſelf, in all the animated beings which people the univerſe, we chuſe an animal, or even the body of man, to ſerve as a foundation to our knowledge, and to find out, by way of compariſon, the other organiſed beings,

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we ſhall find, that, though all thoſe beings exiſt alone, that all vary by different gradations to infinity, there exiſt alſo, at the ſame time, a primitive and general deſign, which we may trace very far, and of which the gradations are much ſlower than thoſe of the form and other apparent relations; for, without mentioning the organs of digeſtion, circulation, and generation, which appertains to all animals, and without which the animal would ceaſe to be an animal, and could neither ſubſiſt nor reproduce; there is even in the parts which contribute moſt to the variety of the exterior form, a prodigious reſemblance which neceſſarily calls to our minds, a firſt deſign, upon which all ſeem to have been projected: the body of a horſe, for example, which by a ſingle glance of the eye, appears ſo different from the body of a man, when it is compared part by part, inſtead of ſurpriſing by the difference, only ſurpriſes by the ſingular and almoſt whole reſemblance which we find: in fact, take the ſkeleton of a man, bend downwards the bones of the pelvis, ſhorten the bones of the thighs, legs, and arms, lengthen thoſe of the feet and hands, ſow together the phalanxes, lengthen the jaws by ſhortening the frontal bone, and lengthening the ſpine of the back, this ſkeleton would ceaſe to repreſent the remains of a human figure, and would be the ſkeleton of a horſe; for, it is eaſy to ſuppoſe, that in lengthening the ſpine of the back and jaws, we augment at the ſame time the number of the vertebres, ribs, and teeth; and, it is only, in fact, by the number of thoſe bones, which may be looked upon as acceſſary, and by the prolongation, the ſhortening, or junction, of the others, that the ſtructure of the body of this animal differs from the ſtructure of the human body. We ſee in the deſcription of the horſe, theſe facts too well eſtabliſhed to doubt: but, to follow theſe relations ſtill farther, let us conſider ſeparately ſome

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eſſential parts of the ſtructure; for example, we find ribs in all quadrupeds, in birds, and in fiſh; and, we find the veſtiges thereof even in the tortoiſe, where they ſtill appear by the furrows marked out under its ſhell. Let us conſider, as Mr. Daubenton has remarked, that the foot of a horſe, ſo different in appearance from the hand of a man, is notwithſtanding compoſed of the ſame bones; and that we have, at the extremity of each of our fingers, the ſame little bone reſembling a horſe-ſhoe, which terminates the foot of this animal; and, we ſhall judge if this hidden reſemblance is not more marvellous than the apparent differences, if this conſtant conformity and deſign followed from man to quadrupeds, from quadrupeds to cetaceous animals, from cetaceous animals to birds, from birds to reptiles, from reptiles to fiſh, &c. in which, the eſſential parts, ſuch as the heart, the inteſtines, the ſpine of the back, the ſenſes, &c. are always found, that, in creating animals, the Supreme Being has followed but one idea, and varied it at the ſame time in every poſſible manner, that man may equally admire the magnificence, execution, and ſimplicity of the deſign.

In this point of view, not only the aſs and horſe, but even man, the monkey, quadrupeds, and all animals, may be looked upon as making but one family; but, ought we to conclude, that in this great and numerous family, that God has conceived and created from nothing, there are other ſmall families projected by nature; and produced by time, ſome of which are compoſed only of two individuals, as the horſe and the aſs; others of ſeveral individuals, and ſuch as the weazel, the pole-cat, the ferret, &c. and alſo, that in vegetables, there are families of ten, twenty, thirty plants, &c. If theſe families exiſted, in fact, they could only be formed by the mixture, the ſucceſſive variation, and the

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degenarion of the original ſpecies; and, if we admit, for once, that there are families in plants and animals, that the aſs is of the family of the horſe, and that he only differs, becauſe he has degenerated, we may ſay, with as much propriety, that the monkey is of the ſame family as man, and he is a man degenerated; that man and the monkey had but one common origin, like the horſe and aſs; that each family, as well in animals as in vegetables, had but one only ſtock; and even, that all animals are come from one animal, which in the ſucceſſion of time is perfectioning and degenerating, has produced all the race of other animals.

The naturaliſt, who have ſo eaſily eſtabliſhed families and vegetables, do not ſeem to have found the whole extent of theſe conſequences, which would reduce the immediate product of the creation, to as ſmall a number of individuals as we deſire: for, if it was once proved, that we could eſtabliſh theſe families with reaſon, if it was proved, that in animals and even in vegetables, there were, I do not ſay many ſpecies, but one only, which had been produced by degeneration of another ſpecies; if it was true, that the aſs was only a horſe degenerated, there would be no bounds to the power of nature, and, we ſhould not be blameable in ſupporting, that, from one only being it had been able in proceſs of time to extract all the other organized beings.

But it is certain, by revelation, that all creatures have equally participated of the grace of creation; that the two firſt of each ſpecies, all of all ſpecies, are come out of the hands of the Creator, and we ought to believe, that they were neatly ſuch from the beginning as they appear at preſent in their deſcendants: alſo ſince we have obſerved nature, from the time of Ariſtotle, to the preſent time, we have not ſeen any new ſpecies, notwithſtanding the rapid motion that drags on, or diſſipates the parts of matter,

ter; notwithſtanding the infinite number of combination which muſt have been in the ſpace of twenty ages, notwithſtanding the fortuitious couplings of animals nearly allied in their ſpecies, or, others bearing no reſemblance, and from which nothing has ever reſulted but individuals vitiate and ſterile, and ſuch as have not been able to become a ſtock for new generations. Was the exterior as well as the interior reſemblance in ſome animals, ſtill greater than they are, between the horſe and the aſs, we ought not to confound theſe animals in the ſame family, nor ſhould we give them one common origin, for if they come from the ſame ſtock, if in fact they were of the ſame family, we might bring them nearer by new alliances, and undo by time, what time has already done.

We muſt alſo conſider, that although nature makes its progreſs through clouds, and by degrees frequently imperceptible, the intervals of theſe degrees or clouds, are not always the ſame, that, the more exalted the ſpecies the fewer they are in number, and the greater the intervals of the ſhades are that ſeparate them; that the ſmaller ſpecies, on the contrary, are very numerous at the ſame time have more affinity to each other, ſo that one is the more tempted to confound them together in one ſame family, as they fatigue and embarraſs us the more by their numbers and ſmall differences, with which we are obliged to charge our memories: but, we muſt not forget, that theſe families are our own works, that we have made for the eaſe of our own minds, that if we cannot comprehend the real ſequence, it is ourſelves, not nature that is in fault, who knows not theſe pretended families; and, in fact, contains only individuals.

An individual is a ſeperate being, detatched, and which has nothing in common with other beings, if not that he reſembles them, or rather differs from them;

them: all reſembling individuals which exiſt on earth, are thought to compoſe the ſpecies of theſe individuals; notwithſtanding, it is not the number or collection of individuals which bear a reſemblance, which from the ſpecies, it is the conſtant ſucceſſion and renewing of theſe individuals which conſtitute them; for, a being which exiſted for ever would not be a ſpecies, no more than a million of like beings which would endure for ever. Species then is abſtracted and general word, which exiſt only in conſidering nature in the ſucceſſion of time, and in the conſtant deſtruction, and as conſtant renewal of beings. It is comparing the preſent ſtate of nature, with that of the paſt, and actual individuals with former, that has given us a clear idea of what is called ſpecies, and the compariſon of the number or reſemblance of individuals, is only an acceſſary idea, and frequently independant of the firſt; for, the aſs reſembles the horſe more than the barbet the greyhound, notwithſtanding the barbet and greyhound are but one ſpecies, ſince they produce together individuals, which can themſelves produce others; inſtead of which, the horſe and aſs are certainly of different ſpecies, ſince they produce together vicious and unfruitful individuals.

It is then in the characteriſtic diverſity of the ſpecies, that the ſhades of nature are the moſt ſenſible and beſt marked, we may even ſay, that theſe ſhades between the ſpecies are the moſt equal, and leaſt variable of all, ſince we may always draw a line of ſeperation between two ſpecies: that is to ſay, between two ſucceſſions of individuals which re-produce and cannot mix, as we may alſo re-unite in one ſpecies two ſucceſſions of individuals which would re-produce in mixing. This is the moſt fixed point that we have in natural hiſtory, all the other reſemblances, and all the other differences that we can make in the compariſon of beings, would be neither

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ſo conſtant, ſo real, nor ſo certain; theſe intervals would alſo be the only lines of ſeperation that would be found in this work, we do not divide beings otherwiſe than they are in fact, each ſpecies, each ſucceſſion of individuals which re-produce and cannot mix, will be conſidered apart, and treated ſeperately, and we ſhall only make uſe of families, kinds, orders, and claſſes as far as ſerves to explain nature.

The ſpecies then, being nothing more than a conſtant ſucceſſion of individuals alike, and which reproduce, ought only to extend to animals, and vegetables, and that it is only an abuſe of the terms, or ideas uſed to point out the different kinds of minerals. We ſhould not then look on iron as one ſpecies, and lead as another ſpecies, but, only as two different metals, and it will be ſeen in our diſcourſe on minerals, that the lines of ſeperation which we employ in the diviſion of mineral ſubſtances will be different from thoſe which we make uſe of for animals and vegetables.

But to return to the degeneration of beings, and particularly, to thoſe of animals; let us obſerve and examine more nearly ſtill, the ſteps of nature, in the variety which ſhe offers to our view; and, as the human ſpecies is beſt known to us, let us obſerve how far theſe ſteps of variation extend. Men differ in colour from black to white, from double to ſimple in their height, largeneſs, lightneſs, ſtrength, &c. and above all in their underſtandings; but this laſt quality having nothing to do with matter, ought not to be here conſidered. The others are the uſual varations of nature, which proceeds from the influence of climate and food; but, theſe differences of ſize and colour does not prevent that the Negro, and the White, the Laplander and Patagonian, the Giant and Dwarf, producing together individuals which can of themſelves re-produce, and conſequently theſe men ſo different in appearance, are not all

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of one ſole and ſame ſpecies; ſince this conſtant reproduction is that which conſtitutes the ſpecies. After theſe general variations, there are others which are more particular, which are alſo perpetuated, ſuch as the enormous men who are called of the race of St. Thomas, in the iſland of Ceylon; the red eyes and white hair of the Indians of Darian, and the Chacrelas: the ſix fingers on the hands, and ſix toes on the feet in ſome certain families, &c. Theſe ſingular varieties are either accidental defaults or exceſſes, which being found in ſome individuals are afterwards propagated from race to race, like other defects and hereditary diſeaſes; but theſe differences though conſtant, ſhould not be regarded otherwiſe than as individual varieties, which do not ſeparate theſe individuals from their ſpecies, ſince the extraordinary race of theſe men with large legs, or ſix fingers may mix with the ordinary race, and produce individuals which reproduce themſelves. We ſhould ſay the ſame thing of all other deformities, which are communicated from fathers and mothers to their children. Thus far the errors of Nature extend, and theſe are the greateſt limits of theſe varieties in men; and if there are individuals which degenerate ſtill more, theſe individuals reproducing nothing, neither alter the conſtancy nor the uniformity of the ſpecies. Thus in man there is but one ſame ſpecies, and, though this ſpecies is perhaps more numerous, more abundant in individuals, and at the ſame more inconſtant and irregular in all its actions, we do not ſee that this prodigious diverſity of nouriſhment, climate, and ſo many other combinations as may be ſuppoſed, have produced beings different enough from the others to conſtitute new ſtocks, and at the ſame time ſo like us, that we are not able to deny but that we are of the ſame race.

If the negro and the white could not procreate together, if even their offspring ſhould remain unfruitful, there would be two very diſtinct ſpecies; the negro would be to man, what the aſs is to the horſe; or rather, if the white was the man, the negro would be no longer ſuch, but would be a diſtinct animal like the monkey, and we might with reaſon think, that the white and the negro had not the ſame common origin; but even this ſuppoſition is denied by the fact, and ſince all men can communicate and produce together, all men come from the ſame ſtock, and are of the ſame family.

When two individuals cannot produce together, we can no otherwiſe account for it, but from ſlight difference in their temperament, or ſome accidental fault in the organs of generation, of one or the other of theſe two individuals; that two individuals of different ſpecies, and which are joined together, ſhould produce other individuals which do not reſemble the one or the other in no fixed particular, and can conſequently produce nothing like themſelves, there needs for that but a certain degree of conformity between the form of the body and the organs of generation of theſe different animals; but what an immenſe, and perhaps infinite number of combinations are even neceſſary, even to ſuppoſe that two animals, male and female, of a certain ſpecies, have not only ſo much degenerated, as to be no longer of the ſame ſpecies; that is to ſay, are no longer able to produce with thoſe of their own kind, but are even degenerated to ſuch a degree that they can only produce together! And alſo, what a prodigious immenſity of combinations are neceſſary that the production of theſe two degenerated animals ſhould follow exactly the ſame laws which are obſerved in the production of perfect animals; for a degenerated animal is itſelf a vitiated production; and how can a vitiated, depraved origin,

gin, become a ſtock, and not only produce a conſtant ſucceſſion of beings, but even produce them in the ſame manner, and following the ſame laws, which in effect reproduce the animal, the origin of which is pure.

Although we cannot demonſtrate that the production of a ſpecies, by degeneration, is a thing impoſſible in nature, yet the number of probabilities to the contrary is ſo great, that even philoſophically, we can no longer doubt of it; for if ſome ſpecies have been produced by the degeneration of others, if the ſpecies of the aſs come from the ſpecies of the horſe, this can only have happened ſucceſſively, and by degrees their would have been between the horſe and the aſs, a great number of intermediate animals, the firſt of which would have differed but ſlightly in its Nature from the horſe, and the latter would have approached by degrees to that of the aſs: and why do we not ſee the repreſentatives, the deſcendants of theſe intermediate ſpecies? why do only the two extremes remain?

The aſs is then an aſs, and not a horſe degenerated; the aſs has a naked tail; he is neither a ſtranger, an intruder, nor a baſtard; he has, like all other animals, his family, his ſpecies, and his rank; his blood is pure, and although his nobility is leſs illuſtrious, yet it is equally good, equally antient with that of the horſe. Why then have we ſo much contempt for this animal; ſo good, ſo patient, ſo ſteady, ſo uſeful? do men carry their contempt even to animals, thoſe which ſerve them ſo well, and at ſo ſmall an expence? we beſtow education on the horſe, take care of him, inſtruct him, and exerciſe him, whilſt the aſs is abandoned to the care of the loweſt ſervant, or the tricks of children, ſo that inſtead of improving, he muſt loſe by his education, and if there were not a fund of good qualities, he would certainly loſe them, by the manner in which

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he is treated. He is the may-game of the ruſticks, who beat him with ſtaffs, overload him, and make him work beyond his ſtrength. We do not conſider, that the aſs would be in himſelf, and with reſpect to us, the moſt beautiful, the beſt-formed, and moſt diſtinguiſhed of animals, if there were no horſe in the world; he is the ſecond, inſtead of being the firſt, and it is from that only, that he appears to be of no value: the compariſon degrades him, we look at him, and give our opinions, not from himſelf, but comparatively with the horſe; we forget that he is an aſs, that he has all the qualities of his Nature, all the gifts attached to his ſpecies; and at the ſame time, we only think of the figure and qualities of the horſe, which are wanting in him, and which he ought not to have.

He is naturally as humble, patient, and quiet, as the horſe is proud, ardent, and impetuous; he ſuffers with conſtancy, and perhaps with courage, chaſtiſement and blows; he is moderate both as to the quantity and quality of his food; he is contented with the hardeſt and moſt diſagreeable herbs, which the horſe, and other animals, will leave with diſdain; he is very delicate with reſpect to his water, for he will drink none but the cleareſt, and from rivulets which he is acquainted with; he drinks as moderately as he eats, and does not put his noſe in the water through fear, as ſome ſay, of the ſhadow of his ears: as care is not taken to curry-comb him, he frequently rolls himſelf on the graſs, thiſtles, and in the duſt, and without regarding his load he lays himſelf down, to roll about as often as he can, and by this, ſeems to reproach his maſter, of the little care he takes of him; for he does not paddle about in the mud and in the water, he even fears to wet his feet; and will turn out of his road, to avoid the mud, his legs are alſo drier and cleaner then the horſe; he is ſuſceptible of education, and ſome

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have been ſeen ſufficiently diſciplined to be made a ſhew of.

In their earlieſt youth they are ſprightly, and even handſome, they are light and genteel, but they ſoon loſe it, either from age or bad treatment, and become ſlow, indocile and headſtrong: he is ardent in nothing but pleaſure, or rather he is ſo furious in that reſpect that nothing can retain him; he has been known to exhauſt himſelf therein, and die ſome moments afterwards; and as he loves with a kind of madneſs, he has alſo the ſtrongeſt attachment to his progeny. Pliny aſſures us, that when they ſeparate the mother from the young one, ſhe will go through fire to recover it; he is alſo ſtrongly attached to his maſter, notwithſtanding he is uſually ill-treated, he will ſmell him afar off, and can diſtinguiſh him from all other men; he alſo knows the places where he has lived, and the ways which he has frequented; his eyes are good, and ſmell acute, eſpecially with regard to the corpuſcles of the ſheaſs, his ears are excellent, which has alſo contributed to his being numbered among timid animals, which it is pretended have all the hearing extremely delicate, and the ears long; when he is overloaded, he ſhews it by lowering his head and bending down his ears: when he is greatly abuſed, he opens his mouth and draws back his lips in a moſt diſagreeable manner, which gives him an air of deriſion and ſcorn; if his eyes are covered over, he remains motionleſs, and when he is laid down on his ſide, and his head is fixed in ſuch a manner, that one eye reſts on the ground and that the other is covered with a piece of wood or ſtick, he will remain in this ſituation without any motion, or endeavour to get up; he walks, trots, and gallops like the horſe, but all his motions are ſmaller and much ſlower; notwithſtanding he can run with tolerable ſwiftneſs; he can gallop but a little way, and only for a ſmall ſpace

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of time, and whatever paces he uſes, if he is hard preſſed, he is ſoon fatigued.

The horſe neighs, and the aſs brays, which he does by a long diſagreeable cry, and diſcordant by alternative diſcords from a ſharp key to a flat, and from a flat to a ſharp, and he ſeldom cries but when he is preſſed by love or appetite. The ſhe-aſs has the voice clearer and ſhriller; thoſe that are gelded, bray very low, and though they ſeem to make the ſame efforts, and the ſame motions of the throat, yet their cry cannot be heard far off.

Of all the animals covered with hair, the aſs is leaſt ſubject to vermin, he has never any lice, which apparently proceeds from the hardneſs and dryneſs, of the ſkin, which is certainly harder than in the greateſt part of other quadrupeds; and it is for the ſame reaſon that he is much leſs ſenſible than the horſe to the whip, and ſting of the flies.

At two years and a half old, the firſt middle inciſive teeth fall out, and afterwards the other inciſive at the ſide of the firſt fall alſo, and are renewed at the ſame time, and in the ſame order as thoſe of the horſe; the age of the aſs is alſo known by his teeth, the third inciſive on each ſide, aſcertains it as in the horſe.

From the age of two years and a half, the aſs is in a ſtate to engender; the female is ſtill more early than the male, and is quite as laſcivious, ſo that unleſs ſhe be beat to allay her amorous convulſive movement, ſhe ſeldom conceives. The moſt uſual time of her being in heat is the month of May or June; when ſhe is pregnant the heat ſoon goes off, and the tenth month, milk is found in her dugs; ſhe falls in the twelfth month, and frequently there are found ſolid pieces of fleſh in the liquor of the amnios, reſembling the hippomanes of a colt; ſeven days after ſhe has foaled, her heat returns again and ſhe is capable of receiving the male, ſo that we can

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uſe the expreſſion continually engender and give ſuck; ſhe only produces one young at a time, and we have ſcarcely ever heard of her having two. At the end of five or ſix months the foal may be weaned, and it is even neceſſary if the mother is big, that ſhe may the better nouriſh the fœtus. The ſtallion aſs ſhould be choſen from the largeſt and ſtrongeſt of his ſpecies; he muſt at leaſt be three years old, but ſhould not exceed ten; his legs ſhould be long, the body plump, the head long and light, the eyes briſk, the noſtrils large, the neck a little long, the breaſt large, the loins fleſhy, the ribs large, the rump flat, the tail ſhort, the hair ſhining, ſoft to the touch, and of a deep grey.

The ſhe-aſs, which like the aſs is three or four years in growing, lives alſo like him twenty-five or thirty years, and it is ſaid, uſually lives longer than the male; but perhaps this happens that as they are often big, there is more care taken of them, inſtead of which the males are conſtantly worn out with fatigue and blows. They ſleep leſs than the horſe, and do not lie down to ſleep, except when they are quite tired. The male aſs laſts alſo much longer than the ſtallion; the older he is the more ardent he appears, and in general the health of this animal is much better than that of the horſe; he is leſs delicate, and is not near ſo ſubject to maladies. The ancients did not even know of any other complaint they had but the glanders, which as we have already ſaid, they are much leſs ſubject to than the horſe.

There are among aſſes different races, as among horſes, but they are much leſs known, becauſe they have not been taken the ſame care of, or followed with the ſame attention; but we cannot doubt that they came all originally from warm climates. Ariſtotle aſſures us, that there were none in his time in Scythia nor in the other neighbouring countries of Scythia,

Scythia, nor even in Gaul; which, he ſays, is a cold climate, and he adds, that a cold climate either prevents them from procreating their ſpecies, or cauſes them to degenerate, and that this laſt circumſtance is the reaſon that they are ſmall and weak in Illyria, Thrace, and Epirus. They are ſtill the ſame in France, though they have been for many ages naturalized there, and the coldneſs of the climate is much leſſened ſince two thouſand years, by the number of foreſts deſtroyed and marſhes dried up; but it is ſtill more certain, that they have been but newly introduced into Sweden and the other northern countries. They appear to have come originally from Arabia, and to have paſſed from Arabia into Egypt, from Egypt into Greece, from Greece into Italy, from Italy into France, and afterwards into Germany, England, and laſtly into Sweden, &c. for they are in fact, weak and ſmall in proportion to the coldneſs of the climate.

This migration ſeems to be well proved by the account of travellers. Chardin ſays, "that there are two kinds of aſſes in Perſia, the aſſes of the country, which are ſlow and heavy, and which are only made uſe of to carry burdens, and a race of Arabian aſſes which are very beautiful, and certainly the firſt aſſes in the world; their ſkin is poliſhed, the head high, the feet light, which they raiſe with grace, and walk well, and are made to ride on. The ſaddles which they uſe with them, are like a bat, round on one ſide, flat on the other; they are made of linen or tapeſtry, and have harneſs and ſtirrups, and they ſit on them nearer the rump than the neck. There are ſome of theſe aſſes which even coſt about eighteen pounds ſterling, and there are none ſold under twenty-five piſtoles." They are broke like horſes, but are taught no other pace than the amble; and the manner of teaching them, is by tying their legs, the hind and the fore leg of the ſame ſide, with

two

two ropes of cotton, which are made to the length of the ſtep of the aſs who is to go the amble. A kind of groom mounts them morning and evening, and exerciſes them in this pace; their noſtrils are ſlit in order to give them more breath, and they go ſo faſt, that one muſt gallop in order to overtake them.

The Arabians, who have ſo long taken care to preſerve the breed of their horſes, would they but take the ſame care of aſſes! or rather does not this prove that Arabia is not only the beſt, but alſo the firſt climate in the world, both for the one and the other? From thence they have paſſed into Barbary and Egypt, where they are handſome and high in ſtature, as well as in climates exceſſively hot, as in the Indies, and in Guinea, where they are larger, ſtronger, and better than the horſes of the country; there are even a great number of them in the Madeiras, where one of the moſt conſiderable and noble tribes of the Indians pay particular homage to them; becauſe they believe that the ſouls of all their nobles paſs into the bodies of aſſes; in ſhort, aſſes are found in great numbers, in all parts of the Eaſt from Senegal to China, and wild aſſes are more commonly found than wild horſes.

The Latins, after the Greeks, have called the wild aſs angra, which animal muſt not be confounded, as ſome naturaliſts, and many travellers have done, with the zebra, of which we ſhall give a ſeparate hiſtory, becauſe the zebra is of a different ſpecies from the aſs. The angra, or wild aſs, is not ſtriped like the zebra, and is not near ſo elegant in figure. Wild aſſes are found in ſome of the iſlands of the Archipelago, and particularly in that of Cerigo; there are alſo many in the deſarts of Lybia and Numidia; they are grey, and run ſo faſt, that the horſes of Barbary only can beat them in hunting. When they ſee a man, they give a loud

cry, turn themſelves about, and ſtop, and do not attempt to fly till they find he comes near them: they are taken in ſnares made with ropes, and go in troops both to paſturage, and to drink; their fleſh is alſo eaten. There were alſo, in the time of Mermol, whom I have already cited, wild aſſes in the iſland of Sardinia, but leſs than thoſe of Africa; and Pietro Della Valle ſaid, he has ſeen a wild aſs at Baſſora, whoſe figure differed in no reſpect from a domeſtic one; he was only of a lighter colour, and had from the head to the tail a ſtripe of white; he was alſo much livelier and lighter in hunting, than aſſes uſually are. Olearius mentions, that one day the king of Perſia made him go up with him into a little building in form of a theatre, in order to eat fruit and ſweetmeats; that, after the repaſt, thirty-two wild aſſes were brought in, whom the king wounded ſeveral times both by firing at them, and by letting fly ſome arrows; that he afterwards permitted the ambaſſadors and other lords to do the ſame; that it was no ſmall diverſion to ſee theſe aſſes with perhaps a number of arrows ſticking in them, wounding and hurting others whom they mixed among, and, with the pain which they felt, would bite and roll over each other in a ſtrange faſhion; and that when they were all killed and laid in a row before the king, they were ſent to the royal kitchen at Iſpahan, the Perſians ſetting ſo great a value on the fleſh of theſe wild aſſes, that they have a proverb expreſſive of it. But there ſeems no probability, that theſe thirty-two wild aſſes were all taken in the foreſt, and therefore it is natural to ſuppoſe they were aſſes brought up in large parks, to have the pleaſure of hunting and eating of them.

Neither aſſes nor horſes have been found in America, although the climate, but eſpecially of that part called North America, is as good for them as any other; thoſe which the Spaniards have tranſ-

ported

ported from Europe, and which they have left in the Weſt Indies, and on the Continent, have greatly multiplied; and in ſome parts wild aſſes are found in troops, and are taken in ſnares like wild horſes.

The aſs with the mare produces large mules, and the horſe with the ſhe-aſs produces ſmall mules, differing from the firſt in many reſpects; but we ſhall reſerve a particular chapter for that ſubject, and ſhall finiſh the natural hiſtory of the aſs with that of its properties, and the uſes to which the animal may be put.

As wild aſſes are unknown in theſe climates, we cannot in reality ſay whether the fleſh is good to eat; but it is certain, that the fleſh of the domeſtic aſs is extremely bad, and harder than that of the horſe. Galen even ſays, that it is a pernicious aliment, and occaſions ſeveral diſeaſes; the milk of the aſs, on the contrary, is an approved and ſpecific remedy for certain complaints, and its uſe is known from the Greeks to us: that it may be good in its kind, we ſhould chuſe a young healthy ſhe-aſs, full of fleſh, that has lately foaled, and which has not ſince been with the male: the young one which ſhe ſuckles muſt be taken from her, and care muſt be taken to feed her well with hay, wheat, and graſs, whoſe qualities may have influence on the diſeaſe, with particular care not to let the milk cool, and not even to expoſe it to the air, which will ſpoil it in a little time.

The ancients alſo attributed great virtue to the blood, urine, &c. of the aſs, and many other ſpecific qualities to the brain, heart, liver, &c. of this animal, which experience has not confirmed.

As the ſkin of the aſs is extremely hard, and very elaſtic, it is uſed for different purpoſes, ſuch as to make drums, ſhoes, &c. and thick parchment for pocket-books, which is ſlightly varniſhed over: it is alſo with aſſes ſkin that the Orientals make the

ſagri,

ſagri, which we call ſhagreen: there is alſo a probability that the bones, as well as the ſkin, of this animal, are harder than the bones of other animals; ſince the ancients made flutes of them, and they were found ſhriller than thoſe made with other bones.

The aſs is, perhaps, with reſpect to himſelf, the animal which can carry the greateſt weight; and as it coſts but little to feed him, and he ſcarcely requires any care, he is of great uſe in the country, at the mill, &c. he alſo ſerves to ride on, as all his paces are gentle, and he ſtumbles leſs than the horſe: he is frequently put to the plough in countries where the earth is light, and his dung is an excellent manure to enrich hard moiſt lands.

THE OX.

THE ſurface of the earth, adorned with its verdure, is the inexhauſtible and common fund from which man and animals draw their ſubſiſtence. Every thing in nature that has life, lives on that which vegetates; and vegetables, in turn, exiſt on the ſpoils of every thing that has lived, or vegetated: to live, it is neceſſary to deſtroy; and, in fact, it is only by deſtroying beings, that animals can nouriſh themſelves and multiply. God, in creating the firſt individuals of each ſpecies of animals and vegetables, has not only given form to the duſt of the earth, but has alſo animated it with life, by incloſing in each individual a greater or leſs quantity of active principles, organs, living molecules, incapable of being deſtroyed, and common to all organiſed beings. The molecules paſs from body to body, and are equally ſerviceable to actual life, and the continuation of it, to the nouriſhment and growth of each individual; and after the diſſolution of the

body,

body, after its deſtruction, and reduction to duſt, theſe organical molecules, on which death has no power, ſurvive, circulate in the univerſe, paſs into other beings, and afford thereto nouriſhment and life. Every production, every renewal, every increaſe by generation, by nutrition, by developement, ſuppoſe, therefore, a preceding deſtruction, a converſion of ſubſtance, a tranſportation of theſe organical molecules which are not multiplied, but which, ſubſiſting always in an equal number, render nature always equally alive, the earth equally peopled, and ever equally reſplendent with the primitive glory of him who has created it.

To take beings in general, the total of the quantity of life is always then the ſame; and death, which ſeems to deſtroy all, deſtroys nothing of this primitive life, which is common to all organiſed beings. As all other powers are ſubordinate and ſubaltern, death attacks only individuals, ſtrikes only the ſurface, and deſtroys the form; can have no power over the matter, and can do no harm to its nature, which only appears to more advantage; which does not permit to deſtroy the ſpecies, but leaves individuals to ripen, and to be deſtroyed by time; to ſhew herſelf independant of death, and time to exerciſe every inſtant, her power always active, to manifeſt her plenitude by her fertility, and to make the univerſe, in reproducing and renewing its beings, a theatre always filled, and a ſpectacle always new.

That beings may always ſucceed, it is neceſſary that they ſhould deſtroy among themſelves; that animals may ſubſiſt and be nouriſhed among themſelves, they muſt deſtroy vegetables, or other animals; and as, before and after the deſtruction, the quantity of life remains always the ſame, it ſhould ſeem as if it was indifferent to nature which ſpecies were more or leſs deſtroyed; mean time, like an œconomical mother in the midſt of abundance, ſhe has

has fixed bounds to her expences, and prevented the apparent waſte, in giving but to a few ſpecies of animals the inſtinct of feeding on fleſh; and ſhe has even reduced to a ſmall number thoſe ſpecies which are voracious. Thoſe which ſhe has more abundantly multiplied, are both the ſpecies and individuals which feed on plants and vegetables: ſhe ſeems to have been prodigal to the vegetable, and to have beſtowed on each great profuſion and fecundity, greatly perhaps to ſecond her views, in maintaining and even eſtabliſhing this order on the earth. In the ſea, we find all the ſpecies are voracious; they live on their own kind, or on others, and ſo devour perpetually without ever deſtroying, becauſe the fecundity is as great as the depredation, and becauſe almoſt all the food, all the conſumption, turns to the profit of the reproduction.

Man, as maſter, knows how to exerciſe his power on animals; he has choſen thoſe whoſe fleſh pleaſes his taſte; he has made domeſtic ſlaves; he has multiplied them more than nature would have done; he has innumerable flocks of them; and by the care he has taken to increaſe them, he ſeems to have acquired a right to ſlaughter them; but, he extends this right much farther than his wants require; for, independantly of theſe ſpecies, which he has ſubjected, and of which he diſpoſes to his liking: he alſo makes war with ſavage animals, with birds, with fiſhes, and does not even confine himſelf to thoſe of the climate which he inhabits, but ſeeks at a diſtance, and even to the midſt of the ocean, for new food, and all nature ſeems inſufficient to ſatisfy the intemperance, and the inconſtant variety of his appetites. Man conſumes and ſwallows more fleſh than all animals together devour; he is, then, the greateſt deſtroyer, and this more from cuſtom than neceſſity; inſtead of uſing with moderation the bleſſings which are offered him, inſtead of

diſpoſing

diſpoſing of them with equity, inſtead of increaſing them in proportion as he deſtroys. The rich man places all his glory in conſuming, all his grandeur in ſpending, in one day, at his table, as much as would be neceſſary to ſupport many families: he equally abuſes both animals and man, ſome of whom remain ſtarving and languiſhing in miſery, and labour only to ſatisfy the immoderate appetite, and more inſatiable vanity, of this man, who, by deſtroying others through wantonneſs, deſtroys himſelf by exceſs.

Nevertheleſs man can, like animals, live on vegetables; and fleſh, which ſeems ſo analagous to fleſh, is not a better nouriſhment than corn or bread, which is in reality his proper food; that which contributes to the nutrition, developement, growth, and maintenance of the body, is not that groſs matter, which in our eyes ſeems to be the texture of fleſh or herbs, but are thoſe organical molecules, which both the one and the other contain, ſince the ox, by eating graſs, acquires as much fleſh as either man or beaſts, that live only on fleſh or blood: the only real difference between theſe aliments, is, that in an equal quantity, fleſh, corn, and ſeeds contain more organical molecules than graſs, leaves, roots, and other parts of plants, of which we may be certain by obſerving infuſions of theſe different matters; inſomuch, that both man and animals, whoſe ſtomachs and inteſtines are not ſufficiently capacious to admit a great quantity of aliment, cannot eat herbs enough to receive a quantity of organical molecules ſufficient for their nutrition; and it is for this reaſon, that man, and thoſe animals which have but one ſtomach, can only live on fleſh and corn, which in a ſmall quantity contain a great quantity of theſe organical and nutritive molecules; inſomuch, that the ox, and other animals that chew the cud, which have many ſtomachs, one of which is very capacious,

ous, and conſequently can contain a great quantity of graſs, and extract therefrom a ſufficient quantity of theſe organical molecules, for its nouriſhment, growth, and to enable it to multiply its ſpecies; the quantity here recompences for the quality of the food, but the foundation is the ſame: it is the ſame matter, the ſame organical molecules, which nouriſhes man, the ox, and all other animals.

There are thoſe who will tell me, that the horſe has but one ſtomach, and even that very ſmall; that the aſs, the hare, and other animals, which live on graſs, have alſo but one ſtomach, and conſequently this explanation, though it ſeems probable, its perhaps neither true, nor well-grounded; mean time theſe exceptions, ſo far from convincing me to the contrary, appear to me to confirm this opinion: for although the horſe has one ſtomach, he has pockets in the inteſtines, which are ſo very capacious, that they may be compared to the paunch of ruminating animals, and hares have the inteſtines of ſo great a length and diameter, that they are at leaſt equal to a ſecond ſtomach; thus it is not aſtoniſhing that theſe animals can live on graſs; and we find in general, it is wholly on the ſize of the ſtomach and inteſtines, that their manner of feeding depends, for ruminating quadrupeds, ſuch as the ox, the goat, camel, &c. have four ſtomachs, and the inteſtines, of a prodigious length; theſe alſo live on graſs, and graſs alone ſuffices them; horſes, aſſes, hares, rabbits, guinea pigs, &c. have but one ſtomach, and live on herbs and corn; for boars, ſquirrels, &c. whoſe ſtomachs, and bowels are leſs capacious, eat but little graſs, and live on corn, fruits, and roots; thoſe, ſuch as the wolf, fox, tyger, &c. which have the ſtomach ſmaller than other animals, in proportion to the ſize of their bodies, are obliged to chuſe the moſt ſucculent aliments; and thoſe which

abound

abound moſt with organical molecules, and to eat fleſh and blood, corn and fruits.

It is on this neceſſary and phyſical relation, then, much more than on the ſameneſs of taſte, that is founded the diverſity, which we ſee in the appetites of animals; for, if neceſſity did not determine them oftener than taſte, how could they devour corrupted and infected fleſh, with as much avidity as they would the moſt freſh and juicy? Why do they eat equally of all kinds of fleſh? We ſee that domeſtic dogs, which have it in their power to chuſe, conſtantly reject certain meats, ſuch as the ſnipe, the thruſh, the hog, &c. whilſt wild dogs, wolves, foxes, &c. eat equally the fleſh of the hog, the ſnipe, and birds of all ſpecies, and even frogs, for we have found two in the ſtomach of a wolf; and when they can neither get fleſh nor fiſh, they will eat fruit, corn, grapes, &c. and they always prefer thoſe which, in a ſmall portion, contain a large quantity of nutritive parts; that is to ſay, organical, molecules, proper for the nouriſhment and ſubſiſtence of the body.

If theſe are not ſufficient proofs, let us again conſider the method we make uſe of to fatten cattle; we begin by caſtration, by which the organical molecules eſcape in more abundance; then, inſtead of leaving the ox to his uſual paſture, and to graſs for his only food, we give him bran, corn, turneps; in a word, more ſubſtantial aliments than graſs; and in a little time the fleſh of the animal augments the juices, fat abounds, and, from a fleſh hard and dry of itſelf, forms a viand ſo ſucculent and good, that it is the chief of our beſt repaſts.

It alſo reſults from what we have ſaid, that man whoſe ſtomach and inteſtines are not ſo capacious with reſpect to the ſize of his body, could not live on graſs alone; at the ſame time, it is proved by facts, that he can live on vegetables, and other ſeeds of plants, ſince there are whole nations, and orders of

men, who are forbid by their religion to eat of any thing that has had life; but theſe examples, ſupported on the authority of Pythagoras, and recommended by ſome phyſicians, do not appear ſufficient to convince us, that it would benefit mankind and that the human ſpecies would multiply in a greater proportion, if they lived on vegetables, and bread; the rather as peaſants, whom the luxuries of cities, and the ſumptuouſneſs of our tables, reduce to this mode of living, languiſh and are worn out with fatigue, ſooner than perſons in a middle ſtation of life, to whom wants and exceſſes are equally unknown.

After man, thoſe animals which live on fleſh only, are the greateſt deſtroyers: they are at the ſame time both the enemies of nature, and the rivals of man. It is only by an attention always new, and by cares premeditated and followed, that theſe flocks, theſe birds, &c. can be ſheltered from the fury of the birds of prey, and the carniverous wolf, fox, weazel, &c. and it is only by a continual war, that he can preſerve his grain, fruits, all his ſubſiſteance, and even his cloathing, againſt the voracity of the rats, moths, mites, &c. Inſects are among thoſe creatures, which do more harm than good in the world; inſtead of which, the ox, the ſheep, and thoſe other animals which feed on graſs, are the beſt, the moſt uſeful, and the moſt precious for man; ſince they not only nouriſh him, but conſume and coſt him leaſt: the ox, above all the reſt, is the moſt excellent in this reſpect, for he gives as much to the earth as he takes from it, and even enriches the ground on which he lives; inſtead of which the horſe and the greateſt part of other animals, in a few years impoveriſh the beſt paſture-land.

But theſe are not the only advantages that this animal procures to man; without the ox, the poor and the rich would have much difficulty to live; the

earth

earth would remain uncultivated, the fields, and even the gardens would be dry and ſterile; it is on him, that all the work of the country falls, heis the moſt uſeful, and faithful domeſtic, he is the ſupport of farming, and does all the labour of agriculture: formerly heformed the only riches of mankind, and ſtill he is the baſis of the riches of ſtates, which only flouriſh, and are ſupported by, the opulence of the earth, and the number of cattle; ſince theſe are the only real property we poſſeſs, all others, even gold and ſilver, being only arbitrary repreſentations, monies of credit, which are of worth no longer than the produce of the earth give it them.

That the ox is not ſo proper as the horſe, the aſs, the camel, &c. for carrying burthens, the form of his back and loins, is a demonſtration; but the thickneſs of his neck, and the broadneſs of his ſhoulders ſufficiently indicate that he is proper for drawing, and carrying the yoke; it is alſo, in this manner that he draws with the moſt advantage, and it is ſingular that this cuſtom is not general.

Thoughout ſome provinces they oblige him to draw with his horns, for which the only reaſon they give is, that when harneſs is fixed to his horns, he is managed with more eaſe: his head is very ſtrong, and he draws very well in this manner, but with much leſs advantage than when he draws by the ſhoulders. He ſeems to be made on purpoſe for the plough; the ſize of his body, the ſlowneſs of his motions, the ſhortneſs of his legs, and even his tranquility and patience when he labours, ſeem to concur in making him proper for the cultivation of the fields, and more capable than any other of overcoming the conſtant reſiſtance that the earth oppoſes to his efforts: the horſe, although perhaps as ſtrong as the ox, is, however leſs, proper for this work; his legs are too long, his motions are too great, too ſudden, and he is alſo more impatient, and is eaſier fatigued;

fatigued; we take from him his lightneſs, all the ſuppleneſs of his motion, and all the grace of his attitude, when he is put to this laborious work, which requires more conſtancy than ardour, and more ſtrength and weight than ſwiftneſs.

In thoſe ſpecies of animals, which man has formed into flocks, and where the multiplication is the principal object, the female is more neceſſary, more uſeful, than the male; the produce of the cow, is a benefit which grows, and which is renewed every inſtant, the fleſh of the calf is healthy and delicate, the milk is the food of children, butter reliſhes the greateſt part of our victuals, and cheeſe is the common food of the country-people; how many poor families are at this time, reduced to live on their cow! Theſe ſame men who every day, and from morning to night, groan with anguiſh, exhauſted with continual labour, gain nothing from the earth but black bread, and are obliged to give to others the flour, the ſubſtance of their grain; it is through them, and not for them, that the harveſts are abundant; theſe ſame men who breed and multiply cattle, who take care of and are conſtantly occupied with them, dare not enjoy the fruits of their labour, the fleſh of the beaſts they are forbidden to eat, reduced as they are by the neceſſity of their condition, that is to ſay, by the brutality of other men, to live like horſes, on barley and oats, or on common herbs, and ſour milk.

The cow may alſo be uſed for the plough, and though ſhe is not ſo ſtrong as the ox, yet ſhe is often made uſe of to ſupply his place; but, if we mean to employ her for this uſe, as much care ſhould be taken as poſſible, to match her with an ox of the ſame ſize and ſtrength, or with another cow, in order to preſerve the equality of the draught, and to the more we keep

keep the plough in an equilibrium between theſe two powers, the more regularly is the ground tilled. We frequently ſee from ſix to eight oxen made uſe of for ſtiff land, but more eſpecially in fallow grounds which break up in large clots, whilſt two cows are ſufficient to plough light and ſandy ſoils: the antients confined the ox to an hundred and twenty paces, the greateſt extent of the furrow, that he is capable of tracing out without ſtopping, after which, they ſay, it is neceſſary to let him take breath a few moments, before he is made to go on with the ſame furrow, or begin a freſh one. The antients took delight in the ſtudy of agriculture, and gloried in ploughing themſelves, or at leaſt in favouring the labourer, and ſparing the trouble of the cultivator and the ox; but among us, thoſe who enjoy the greateſt ſhare of the bleſſings of this earth, are thoſe who know leaſt how to eſteem, and to encourage, the art of agriculture.

The bull ſerves chiefly for the propagation of his ſpecies; and though we can make him ſubmit to work, yet we are leſs ſure of his obedience, and we muſt be on our guard againſt the uſe he makes of his ſtrength. Nature has made this animal indocile and haughty, and in rutting time he is unmanagable, and frequently furious; but by caſtration theſe impetuous motions ceaſe, whilſt it robs him of none of his ſtrength, but renders him bigger, weightier, and more proper for the work for which he is intended, as alſo more tame and patient, more docile and leſs troubleſome to the reſt: an herd of bulls would be an untruly herd, which man could neither tame, nor guide.

The bull, like the horſe, ſhould be choſen a ſtallion among the handſomeſt of his ſpecies: he ſhould be large, well-made, and full of fleſh; his eyes black, his looks haughty and fierce, the forehead open, the he d ſhort, the horns thick, ſhort, and

and black, the ears ſhort and ſoft, the muzzle large, the noſe ſhort and ſtraight, the neck fleſhy and thick; as alſo the ſhoulders and the breaſt, the loins firm, the back ſtraight, the legs thick and muſcular, the tail long and well-covered with hair, his ſtep firm and ſure, and his coat red. The cows frequently retain the firſt, ſecond, and third time, and as ſoon as they are with calf, the bull takes no more notice of them, although they have ſtill ſome appearance of heat; but this uſually goes off as ſoon as they have conceived, and they themſelves alſo refuſe the approaches of the bull.

Cows are alſo ſubject to drowſineſs, if they are put to the plough and not properly managed; and care ſhould be taken to follow them more when they are with young, than at any other time, in order to prevent their leaping over hedges, ditches, &c. They muſt alſo be put into the richeſt paſtures, and in land that, without being too humid or marſhy, affords plenty of herbage. For ſix weeks before they calve, they ſhould be more fed than uſual, giving them graſs, if ſummer, and, during the winter, bran in the morning, lucern, and ſaintfoin, &c. they ſhould not be milked at that time, the milk being more neceſſary than ever for the nouriſhment of the fœtus. There are alſo ſome cows in which the milk ceaſes a month or ſix weeks before they calve; thoſe which have milk to the laſt are the beſt mothers, and the beſt nurſes; but the milk towards that time is generally bad, and in ſmall quantity: the ſame care ſhould be taken of the cow at and after her delivery, as of the mare, and even more; for the cow when ſhe calves ſeems more weakened and fatigued than the mare, and ſhe muſt be put in a ſtable and kept warm, giving her good litter, and feeding her well, during ten or twelve days, with bean-flower, corn, oats, &c. and mixed with ſalt water, lucern, ſaintfoin, or good moiſt graſs; this

time

time is ſufficient to re-eſtabliſh her ſtrength, after which ſhe is brought by degrees to her uſual manner of living, and to the paſture; only care muſt be taken not to take any of her milk for the two firſt months, which is a great advantage to the calf; beſides, the milk at this time is not of the beſt quality.

The calf is left with its mother for five or ſix days, that it may be kept warm, and ſuck as often as it has occaſion; but it grows and gets ſtrength enough during thoſe five or ſix days, if properly managed; it may then be removed, for it would weaken the cow too much if it was always kept with her: it is ſufficient to let it ſuck two or three times in a day; and to fatten them quickly, they ſhould have raw eggs given them every day, and boiled bread and milk: at the end of four or five weeks this calf will be excellent eating. It is ſufficient to let a calf ſuck, deſigned for the butcher, thirty or forty days; but thoſe which are intended to grow up, ſhould be ſuffered to ſuck for two months at leaſt; the more they are allowed to ſuck, the ſtronger and bigger they will be: thoſe which are born in the months of April, May, and June, are the fitteſt to be raiſed; for calves which are born later, never acquire ſtrength enough to reſiſt the injuries of the following winter, for they almoſt all languiſh and periſh with the cold.

The calves deſigned to be brought up, ſhould be weaned at two, three, or four months; but before the milk is entirely taken from them, they ſhould have a little good graſs, or ſaintfoin, cut fine, that they may accuſtom themſelves by degrees to this new food; after which they ſhould be entirely ſeparated from the mother, and not ſuffered to go near her, either in the ſtable, or in the field, where it ſhould be taken every day, and ſuffered to remain from morning to night during the ſummer; but as ſoon as the cold begins in autumn,

tumn, they ſhould be taken late in the morning, and carried home ſoon in the evening; and during the winter, as great cold is extremely hurtful to them, they ſhould be kept warm in a ſtable, cloſely ſhut and well littered; and with their uſual herbs they ſhould have ſainfoin, lucern, &c. and not ſuffered to go out, except in mild weather; and great care muſt be taken of them for the firſt winter, as it is the moſt dangerous time in their lives; for they get ſtrength enough during the following ſummer not to fear the cold of a ſecond winter.

At eighteen months old, the cow is arrived at puberty, and the bull when he arrives at two years; but though they can engender at this age, it is better to ſtay till they are three years old before they are ſuffered to copulate: the ſtrength of theſe animals is greateſt from three years old till nine; after this, neither cows nor bulls are fit for any thing but to fatten for the ſlaughter, as at two years of age they are almoſt at their full growth: the length of their lives is alſo, like that of the greateſt part of the other ſpecies of animals, about fourteen years, and they ſeldom live longer than fifteen.

In all quadrupeds, the voice of the male is ſtronger and deeper than that of the female; and I believe there is no exception to this rule; though the ancients ſay, that the cow, the ox, and even the calf, have the voice deeper than the bull: but it is certain, that the bull has a ſtronger voice, ſince he can be heard much farther. What has afforded grounds to think that his voice is leſs deep, is, that his bellowing is not a ſimple ſound, but a ſound compoſed of two or three octaves, the higheſt of which ſtrikes the ear moſt, and if we give attention thereto, we hear a grave ſound, and at the ſame time, one much deeper than the voice of the cow, the ox, or the calf, whoſe lowings are alſo much ſhorter. The bull only bellows when he is enamoured;

moured; the cow more frequently lows through fear and dread, than love; and the calf bellows from pain, want of food, and a desire of being with its mother.

The dullest and most idle animals are not those which sleep the soundest, or the longest. The ox sleeps, but his sleep is short, and not very sound; for he awakes at the least noise: he usually lies on his left side, and the kidney is always larger and fatter than the kidney on the right side.

Oxen, like other domestic animals, differ in colour; but at the same time red appears the most common colour, and the redder they are, the more they are esteemed; and it is said, that oxen of a bay colour last longest; that those of a brown colour are sooner fatigued, and less long-lived; that the grey, brindled, and white, are not proper for work, and are only fit to be fatted for slaughter: but whatsoever colour the coat of the ox is of, it should be shining, thick, and soft to the touch; for if it is rough and uneven, we have reason to think that the animal is not well, or at least, that he is not of a strong constitution. An ox for the plough should be neither too fat nor too lean; his head should be short and thick, the ears large, with a soft even coat, the horns short, shining, and of a middling size, the forehead high, the eyes large and black, the muzzle large and turned up, the nostrils wide, the teeth white and even, the lips black, the neck short, the shoulders thick and strong, the breast large, the dewlap, that is, the skin on the fore part of the neck, hanging down to his knees, his loins very large, the belly spacious and prominent, the flanks thick, the haunches long, the rump round, the legs and thighs big and nervous, the back straight and full, the tail hanging down to the ground, and covered with a fine tuft of curling hair, the feet firm, the skin thick and pliable, and the muscles

large and elevated: he ſhould alſo be ſenſible of the goad, obedient to the call, and well broke; but it is only by little and little, and beginning early with him, that we can make him ſubmit to the yoke willingly. From the age of two years and a half, or three years at moſt, we muſt begin to uſe him to ſubjection; if it is deferred later, he becomes indocile, and frequently unmanageable. Patience, gentleneſs, and careſſes, are the only methods to be uſed; violence and ill-uſage only ſerve to make him ſullen and untractable for ever: he ſhould be ſtroaked and careſſed, and frequently fed with boiled barley, bruiſed beans, and other nouriſhing food of the ſame kind, which is reliſhing; and it ſhould be mixed with ſalt, which he is very fond of: he ſhould be frequently tied by the horns ſome days before he is put to the yoke; and he ſhould be made to draw the plough with another ox of the ſame ſize which is already broke: care ſhould be taken to tie them together at the rack, and to carry them to the ſame paſturage, that they may become acquainted, and habituate themſelves to the ſame common motions; and the goad ſhould never be made uſe of in the beginning, as it would only ſerve to make him ungovernable: he ſhould only work a little at a time, for he is ſoon fatigued when he is not perfectly broke; and for the ſame reaſon, he ſhould have more food given him then, than at another time.

The ox ſhould only be worked from three years old to ten; and it is proper to take him then from the plough, in order to fatten and ſell him, as the fleſh will be better than if he be kept longer. The age of this animal is known by his teeth and horns. The firſt front teeth fall out when he is ten months old, and are replaced by others which are larger and not ſo white: at ſixteen months thoſe on each ſide of the middle teeth drop out, and are replaced by others;

others; and at three years old, all the inciſive teeth are renewed: they are then all long, white, and even; and, in proportion as the ox advances in years, they decay, and become unequal and black. It is the ſame alſo with the bull and cow; ſo that neither ſex, nor caſtration makes any alteration in the growth or fall of the teeth; nor does either make any difference in the falling of the horns, for they fall off at three years equally from the ox, the bull, and the cow; and theſe are replaced by other horns, which, like the ſecond teeth, fall off no more; only thoſe of the ox and the cow grow bigger and longer than thoſe of the bull; the growth of theſe ſecond horns is not uniform. The firſt year, that is to ſay, the fourth year of the age of the ox, two little pointed horns ſprout, which are even, and terminate at the head by a kind of knob; the following year this knob grows from the head, puſhed out by a cylinder of horn, which forms and terminates alſo by another knob, and ſo on; for as long as the animal lives, the horns grow: theſe knobs become annular knots, which are eaſily to be diſtinguiſhed in the horns, and by which alſo the age may be eaſily known, by reckoning three years for the firſt knob, next the point of the horn, and one year more for each of the intervals between the other knobs.

The horſe eats night and day, ſlowly, but almoſt continually; the ox, on the contrary, eats quick, and takes in a ſhort time all the food which he requires; after which he ceaſes eating, and lies down to ruminate. This difference ariſes from the different conformation of the ſtomachs of theſe animals. The ox, of whoſe ſtomachs the two firſt form but one bag of a vaſt capacity, can, without inconvenience, at the ſame time both receive graſs, which it afterwards ruminates and digeſts at leiſure. The horſe, whoſe ſtomach is ſmall, can receive but a ſmall quantity of graſs, is filled ſucceſſively in proportion

portion as he digeſts it, and it paſſes into the inteſtines, where is performed the principal decompoſition of the food. Having obſerved in the ox and the horſe, the ſucceſſive produce of digeſtion, but, above all, the decompoſition of hay, I have ſeen in the ox, at the entrance of that part of the paunch which forms the ſecond ſtomach, that it is reduced to a kind of green paſte; that in this form it is retained, and contained in the plaits of the third ſtomach; and that the decompoſition is intire in the fourth ſtomach. In the horſe, on the contrary, the food is not decompoſed at all, either in the ſtomach or in the firſt inteſtines, where it only becomes more ſupple and flexible, as having been macerated and penetrated with the liquor with which it is ſurrounded; it arrives at the cœcum, and the colon, without much alteration: it is principally in theſe two inteſtines, of which the enormous capacity anſwers to that of the paunch of ruminating cattle, that in the horſe is performed the decompoſition of the food; but this decompoſition is never ſo intire as that which is made in the fourth ſtomach of the ox.

For theſe reaſons, and from the inſpection of the parts, it ſeems to me, that it is eaſy to conceive how chewing the cud is effected, and why the horſe neither ruminates nor vomits; inſtead of which the ox, and other animals that have many ſtomachs, ſeem not to digeſt the graſs, in proportion as they chew the cud. Chewing the cud is but a vomiting without ſtraining, occaſioned by the re-action of the firſt ſtomach on the food which it contains. The ox fills theſe two firſt ſtomachs, that is to ſay, the paunch, and the bag, which is but a portion of the paunch, as much as they can be. This membrane acts with force on the graſs which it contains; it is chewed but a little, and its quantity is greatly increaſed by fermentation. Were the food liquid, this

this force of contraction would occaſion it to paſs by the third ſtomach, which only communicates with the other by a narrow conveyance, the orifice of which is ſituated in the poſterior parts of the firſt, and almoſt as high as the œſophagus; thus this conduit cannot admit ſuch dry food, or, at leaſt, can only admit the moiſter parts. The food muſt, therefore, neceſſarily paſs up again into the œſophagus, the orifice of which is larger than the orifice of the conduit; in fact, they go up again, and the animal again chews, and macerates them, imbibes them afreſh with its ſaliva, and thus by degrees makes the aliment more moiſt; he reduces it to a paſte, liquid enough for it to go into this conduit which paſſes into the third ſtomach, where it is again macerated before it goes into the fourth; and it is in this laſt ſtomach that the decompoſition of the hay is finiſhed, which is reduced to a perfect mucilage.

What chiefly confirms the truth of this explication, is, that as long as the animals ſuck, and are fed with milk and other liquid aliments, they do not chew the cud; and that they chew the cud much more in winter, when they are fed with dry food, than in ſummer, when they eat tender graſs. In the horſe, on the contrary, the ſtomach is very ſmall, the orifice of the œſophagus is very ſtraight, and that of the pylorus is very large. This alone would be ſufficient to render the chewing the cud impoſſible; for the food contained in this little ſtomach, though perhaps more ſtrongly compreſſed than in the large ſtomach of the ox, does not, however, mount upwards, ſince it can eaſily deſcend through the pylorus, which is very large. It is not even neceſſary, that the hay ſhould be reduced to a ſoft running paſte, to enter; the force of the contraction of the ſtomach puſhes the aliment, which as yet is almoſt dry, and it cannot remount into the œſophagus, becauſe this paſſage is very ſmall in compariſon of that of the pylorus.

It

It is by this difference, then, that the ox chews the cud, and that the horſe cannot perform this operation. But there is ſtill a particular difference in the horſe, which is the reaſon why he does not chew the cud, that is to ſay, vomit with ſtraining, but even why he cannot abſolutely vomit, let him uſe all the efforts he can; it is, becauſe the paſſage of the œſophagus being placed obliquely in the ſtomach of the horſe, the membranes of which form a conſiderable thickneſs, this paſſage makes in this thick part a kind of gutter ſo oblique, that it muſt cloſe ſtill more, inſtead of opening by the convulſions of the ſtomach. Although there is this difference, as well as many others, in the conformation, which we can ſee in the bodies of animals, depending on their conſtant nature, nevertheleſs, there are in the develpement, more particularly in the ſoft parts, differences conſtant in appearance, but which may, and actually do, vary from circumſtances. The vaſt capaciouſneſs of the paunch of the ox, for example, is not entirely owing to Nature, as it is not of that ſize in its primitive conformation, but attains it by degrees, from the large quantity of aliments; for in the calf, which is but juſt born, and even in the calf which ſtill ſucks, and has eat no graſs, the paunch is much ſmaller than in the ox. This capaciouſneſs of the paunch proceeds from the extenſion which is occaſioned by the large quantity of aliments, of which I was well convinced by an experiment that appeared to me deciſive. I brought up two lambs of the ſame age, one on bread, the other on graſs; and when they were a year old, on opening them, I found the paunch of the lamb, which had lived on graſs, was much larger than that of the lamb that had lived on bread.

It is ſaid, that oxen which eat ſlowly, are more capable of working than theſe which eat quick; that oxen fed on high and dry lands, are more lively,

more

more vigorous, and more healthy than thoſe which live in low humid grounds, that they all become ſtronger when they are fed on dry hay, than when they are fed on graſs; that they meet with more difficulty, on the change of climates, than the horſe; and that for this reaſon we ſhould never purchaſe oxen for the plough, but in our own neighbourhood.

In winter, as oxen do nothing, it is ſufficient to feed them on ſtraw with a little hay: but in the time that they work, they ſhould have much more hay than ſtraw, likewiſe a little bran, or a few oats before they are put to work. In the ſummer, if there is not hay ſufficient, they ſhould have freſh-cut graſs, leaves of aſh, elm, oak, &c. but this food ſhould be given in a ſmall quantity, as the exceſs of it, ſince it is what they are very fond of, occaſions them to void bloody urine; but lucern, ſaintfoin, lupins, turnips, either dry or green, are very good for them, alſo boiled barley, &c. It is not neceſſary to lay down any particular rule for the quantity of their food, as they never eat more than is neceſſary for them, and it might do always to ſupply them till they leave ſome. They ſhould not be put to paſture till about the middle of May; they ſhould be kept at paſture all the ſummer; and, about the middle of October, they ſhould be put to fodder; only obſerving not to change them too ſuddenly from green to dry food, and from dry to green, but to uſe them by degrees to the change.

Great heat incommodes this animal more perhaps than great cold; and, during the ſummer, they ſhould be taken to work at day-break; they ſhould alſo be taken to the ſtable, or left to feed in the woods during the heat of the day, and not ſent to work again till three or four in the afternoon; in ſpring, winter, and autumn, they may be ſuffered to work from eight to nine in the morning, till five

or

or ſix in the evening. They do not require ſo much care as horſes; but at the ſame time, if we would bring them up healthy and vigorous, care ſhould be taken to curry-comb them every day, alſo to waſh and greaſe the hem of their hoofs, &c. they muſt alſo be made to drink at leaſt twice a-day, and they are fond of water that is freſh and cool, inſtead of which the horſe loves it luke-warm.

Nearly the ſame food and care are requiſite for the ox, and the calf; though the calf that ſuckles requires more particular attention, as well in the chuſing as in the management. It is ſaid, that black cows give the beſt milk, and that white cows give the moſt; but of whatever colour the ſucking calf is of, it ſhould be fleſhy, have a briſk eye, and be light in its walk; her milk alſo ſhould be plentiful, and of a good kind; ſhe ſhould be milked twice a-day in ſummer, and once in winter; and, if we would increaſe the quantity, ſhe muſt be fed with more ſucculent food than graſs.

Good milk is neither too thick, nor too thin; its conſiſtence ſhould be ſuch, that when we take a drop, it ſhould preſerve its roundneſs without running; and in colour it ſhould be of a beautiful white: that which is inclinable to blue or yellow is worth nothing; its taſte ſhould be ſweet, without any bitterneſs or ſourneſs; it ſhould alſo be of a good colour, or without colour; it is beſt during the month of May, and during the ſummer, than in the winter; and it is never perfectly good but when the cow is of a proper age, and in good health. The milk of young heifers is too thick, that of old cows is too dry, and during the winter it is too thick. The milk of cows which are hot, is not good, any more than that of a cow which is near her time, or which has lately calved. In the third and fourth ſtomach of the calf which ſucks, there are clots of curdled milk; theſe clots of milk dried in the air, ſerve to make rennet,

and

and the longer it is kept, the better it is, and it requires but a ſmall quantity to make a large quantity of cheeſe.

Both cows and oxen love wine, vinegar, and ſalt, and they will devour with avidity a ſeaſoned ſallad. In Spain, and ſome other countries, they place near the young calf one of thoſe ſtones, which are found in mines of mineral ſalt; they lick this ſalt ſtone all the time that the mother is at paſture, which excites the appetite and thirſt ſo much, that the moment the cow returns, the young calf faſtens itſelf to the teat, and ſucks with the greateſt avidity. This makes them grow fatter and faſter than thoſe to which no ſalt is given. It is for the ſame reaſon, that when oxen or calves are diſguſted, they give them graſs ſoaked in vinegar, or ſtrewed over with ſalt; it may alſo be given to them, when they are in health, and if we would excite their appetite in order to fatten them in a ſhort time. It is uſually at the expiration of ten years, that they are put to fatten; if we ſtay longer, there is leſs certainty of ſucceſs, and their fleſh is not ſo good; they may be fattened at all ſeaſons, but the ſummer is generally preferred; becauſe the fattening is attended with leſs expence, and that beginning in the month of May or June, we are almoſt certain of having them fat before the end of October. When we would fatten them, they muſt not be ſuffered to work, and they muſt drink much oftener; they muſt alſo have ſucculent food in abundance, ſometimes mixed with a little ſalt, and be left to chew the cud at leiſure, and to ſleep in the cow-houſe during the heat of the day; in leſs than four or five months they will become ſo fat that it will be difficult for them to walk, and they cannot be conducted to any diſtance but by ſmall journies. Calves and bulls which are gelded may alſo be fattened; but the fleſh of the calf is drier, and that of the bull

is redder and harder than the fleſh of the ox, and has always a ſtrong, diſagreeable taſte.

Bulls, cows, and oxen, are very apt to lick themſelves, but moſtly when they are quiet and at reſt; and as it is thought that it prevents their fattening, it is uſual to rub all the parts of their bodies which they can touch with their dung. When this precaution is not taken, they raiſe up the hair of their coats with their tongues, which are very rough, and they ſwallow this hair in large quantities. As this ſubſtance cannot digeſt, it remains in the ſtomach, and forms round, ſmooth balls, which are ſometimes of ſo conſiderable a ſize, that they incommode them, and prevent their digeſtion, by remaining in the ſtomach. Theſe knobs in time get covered with a brown cruſt, which is ſomewhat hard, which is, notwithſtanding, but a thick mucilage, but which, by rubbing and co-action becomes hard and ſhining: it is never found any where but in the paunch, and if any of the hair gets into the other ſtomachs, it does not remain any more than in the bowels, but ſeems to paſs with the aliments.

Animals which have inciſive teeth, ſuch as the horſe and the aſs, in both jaws, bite ſhort graſs more eaſily than thoſe which want inciſive teeth in the ſuperior jaw; and if the ſheep and the goat bite the cloſeſt, it is becauſe they are ſmall, and their lips are thin. But the ox, whoſe lips are thick, can only bite long graſs; and it is for this reaſon that they do no harm to the paſture on which they live, as they can only bite off the tops of the young graſs: they do not ſtir the roots, and for this reaſon ſcarcely hurt the growth; inſtead of which, the ſheep and the goat bite ſo cloſe, that they deſtroy the ſtalk and ſpoil the root. Beſides, the horſe chuſes the moſt delicate graſs, and leaves the largeſt to grow, the ſtalks of which are hard: inſtead of this, the ox bites theſe thick ſtalks, and by little and little deſtroys

ſtroys the coarſe graſs; ſo that, at the end of ſome years, the field in which the horſe has lived becomes a very bad one, whilſt that on which the ox has brouſed, becomes fine paſture.

The ſpecies of our oxen, which we muſt not confound with the buffalo and others, ſeems to be originally of this temperate climate, great heat being as diſagreeable to them as exceſſive cold. Beſides, this ſpecies, which is ſo abundant in Europe, is not found in the ſouthern countries, and is not extended beyond Armenia and Perſia, and from thence to Egypt, and Barbary in Africa; for in the Indies, as well as the reſt of Africa, and even in America, they have a bunch on the back; but they are quite of a different ſpecies from our oxen. Thoſe which are found at the Cape of Good Hope, and in many parts of America, are brought into Europe by the Dutch and the Spaniards; and it appears, in general, that countries which are rather cold, agree better with our oxen than hot ones; and that they are larger and fatter in proportion as the climate is humid, and as it abounds in paſture. The oxen of Denmark, Padolia, Ukraine, and Tartary, which is inhabited by the Calmoucks, are the largeſt of all; thoſe of England, Ireland, and Hungary, are alſo larger than thoſe of Perſia, Turkey, Greece, Italy, France, and Spain; and thoſe of Barbary are the ſmalleſt of all. The Dutch every year bring from Denmark a vaſt number of large thin cows, which cows, when in Holland, give more milk than French cows, and it is poſſible they are of that breed of cows which has been carried into Poitou, Aunis, and Charente. Theſe cows are larger, and much thinner than common cows; they produce double the quantity of milk and butter; their calves alſo are much larger and ſtronger; they have milk at all times; and they may be milked all the year, excepting four or five days before they calve. Though they

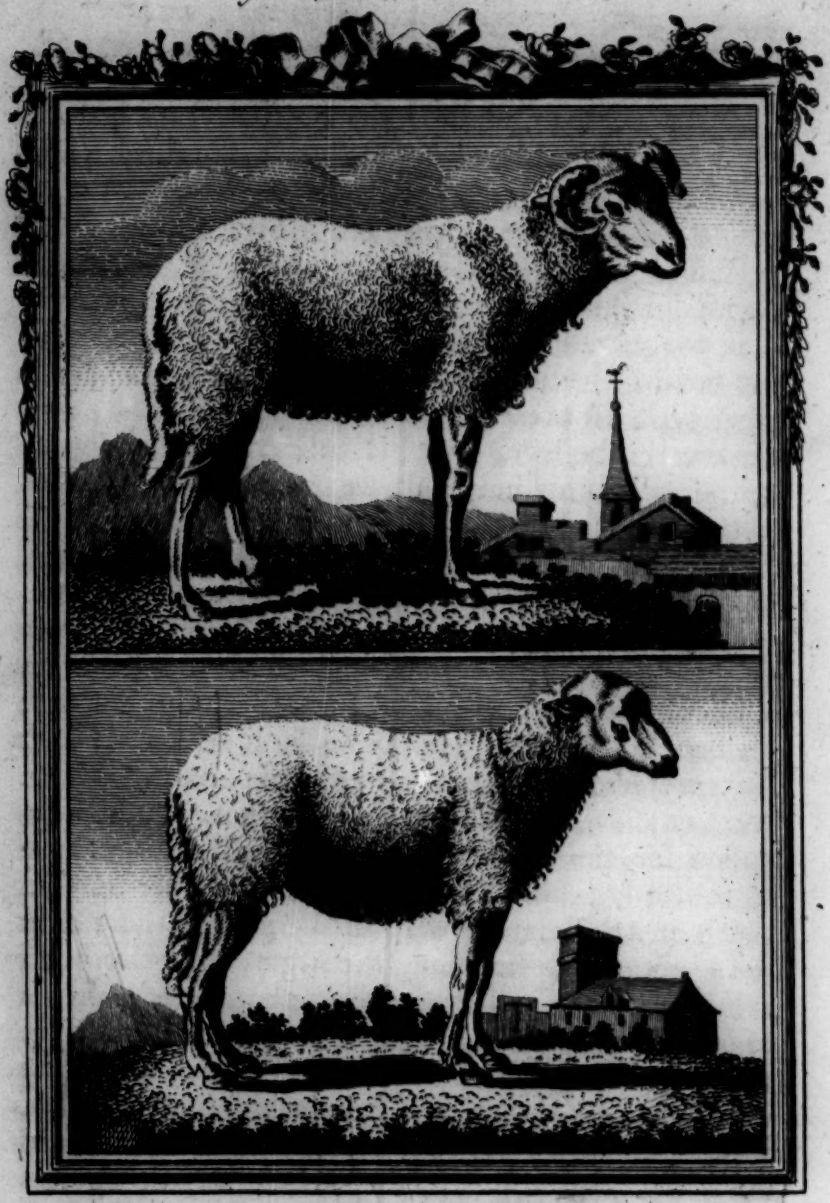
they eat no more than common cows, their paſture, however, muſt be excellent; and as they are always lean, it is certain that all the ſuperabundance of their food turns into milk; inſtead of which, common cows become fat, and ceaſe to give milk when they have lived ſome time in rich paſtures. With a bull of this breed, and common cows, a baſtard breed is made, which is more fruitful, and abounds more in milk than the common breed. Theſe baſtard cows have frequently two calves at a time, and they give milk all the year. Theſe milch cows form a part of the riches of Holland, from which place they ſend butter and cheeſe to a conſiderable value; they give as much milk again as French cows, and ſix times as much as thoſe of Barbary.

In England, Ireland, Switzerland, and the North, they ſalt and ſmoke the fleſh of the ox in large quantities, either for the navy, or for the advantage of commerce. They bring alſo from thoſe countries large quantities of leather, the hide of the ox, and that of the calf, ſerving for an infinite number of uſes. The fat is alſo very uſeful, and is mixed with mutton ſuet. The dung of the ox is the beſt manure for light, dry ſoils. The horn of this animal is the firſt veſſel which was ever drank out of, the firſt inſtrument ever made uſe of to augment ſound, the firſt tranſparent matter ever uſed for windows and lanthorns, ſoftened to make boxes, combs, and a thouſand other things. But I muſt conclude; for a natural hiſtory ſhould finiſh, where a hiſtory of the arts begins.

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Engravd for Buffon's Natural History



The RAM *and* SHEEP.

THE SHEEP.

WE can no longer doubt, but that animals which are actually domeſtic, were formerly wild: thoſe whoſe hiſtory has already been given, afford a ſufficient proof of it; and there are ſtill wild horſes, wild aſſes, and wild bulls. But man, who has conquered ſo many millions of individuals, can he boaſt of having conquered an entire ſpecies? As they were all created without his participation, may he not alſo believe, that they all have had orders to grow withouthis help? If we conſider, nevertheleſs, the weakneſs and ſtupidity of the ſheep, and at the ſame time reflect, that this animal, without defence, cannot find ſafety in flight; that he has for his enemies all devouring animals, which ſeem to ſeek him in preference to any other, and to devour him by choice; that formerly this ſpecies produced but few; that each individual lived but a ſhort time; we ſhall be tempted to think, that from the beginning, ſheep were confided to the care of man; that they had occaſion for his protection to ſubſiſt, and of his care to multiply; ſince it is a fact, that there are no wild ſheep in the deſarts; that in all places where man does not rule, the lion, the tiger, and the wolf reign by force, and by cruelty; that theſe animals of blood and carnage, all live longer, and multiply much more than ſheep; and, in ſhort, that if we were now to abandon the troops of theſe ſpecies, which we have rendered ſo numerous, they would ſoon be deſtroyed before our eyes, and the ſpecies would be entirely annihilated by the voraciouſneſs of its numberleſs ſpecies of enemies.

It appears, then, that it is only by our help and care that this animal has been preſerved, is ſtill preſerved,

ſerved, and muſt be preſerved; that, in fine, they could not ſubſiſt of themſelves. The ſheep is abſolutely without reſource, and without defence. The ram has but feeble arms; his courage is nothing but a petulance uſeleſs to himſelf, inconvenient to others, and which is deſtroyed by caſtration. The weather ſheep are ſtill more fearful than ewes; it is through fear that they gather ſo often in troops; the ſmalleſt noiſe, to which they are unaccuſtomed, is ſufficient to make them fly, and get cloſe together. This fear is attended with the greateſt ſtupidity; for they know not how to fly the danger, nor do they even ſeem to feel the inconvenience of their ſituation: they continue wherever they are, either in rain or ſnow, from whence they will not ſtir; and to oblige them to change their ſituation, they muſt have a chief, who is intruſted to walk firſt, and whom they will follow, ſtep by ſtep. This chief will remain with the reſt of the flock, without motion, in the ſame place, if he were not driven from it by the ſhepherd, or the dog which guards them, who, in fact, watches for their ſafety, defends, directs, and ſeparates them, aſſembles them together, and communicates to them motions not their own.

Of all quadruped animals, then, they are the moſt inſenſible, and have the leaſt inſtinct and reſource. Goats, which in many things reſemble them, have much more underſtanding. They know not how to conduct themſelves, and to avoid danger, and are eaſily familiariſed to new objects; inſtead of which, the ſheep neither knows how to fly from danger, nor to face it; let his wants be ever ſo great, he never comes to man for aſſiſtance ſo willingly as the goat; and, which in animals appears to be the laſt degree of timidity, or inſenſibility, the female will ſuffer her lamb to be taken from her without ſhewing any ſigns of anger, or trying

trying to defend it, without even the ſmalleſt reſiſtance, or, by any difference in her bleating, ſhewing the leaſt pain.

But this animal, ſo cowardly in itſelf, ſo wanting in ſentiment, and interior qualities, is to man the moſt precious of all animals, and the moſt uſeful, both for his preſent, and future ſupport. Of it ſelf, it not only ſupplies our greateſt neceſſities, but, at the ſame time furniſhes us both with food and cloathing: without reckoning the particular advantages we have from the milk, the ſkin, and, even the bowels, even the bones, and the dung of this animal ſeem to evince that nature has given it no-but what turns out uſeful to man.

Love, which in all animals, is the moſt general, and lively ſenſation, ſeems alſo to be the only one, which gives them any vivacity. When the ram feels any ſuch emotions, he fights, and runs at the other rams and ſometimes he will attack even his own ſhepherd. The ſheep, however, even when in heat, does not appear more animated, and has only inſtinct ſufficient not to refuſe the approaches of the male, to chuſe her food, and to know her lamb. Inſtinct is more certain, as it is more mechanical. The young lamb, among a numerous flock, will ſearch and find out its mother; and will ſeize the teat, without ever being miſtaken. It is alſo ſaid, that ſheep are ſenſible to the pleaſures of muſic; that they brouze with more aſſiduity, are better in health, and fatten more when they hear the ſhepherd's pipe; but it might be ſaid, with more truth, that it ſerves at leaſt to prevent the weariſomeneſs of the ſhepherd, and, that it is to this ſolitary, idle life that we owe the origin of muſic.

Theſe animals, whoſe underſtandings are ſo ſimple, are alſo of a very weak conſtitution; for they cannot walk long; travelling weakens and exhauſts them; and when they run, they pant, and

are

are ſoon out of breath. The great heat of the ſun, is as diſagreeable to them, as too much moiſture, cold and ſnow. They are ſubject to many diſorders, the greateſt part of which are contagious; ſuper-abundance of fat ſometimes kills them, and always prevents them from having young ones. They ſuffer a great deal in having young ones, have frequent abortions, and require more care, than any other domeſtic animal.

When the ſheep is near her time, ſhe muſt be taken from the reſt of the flock, and watched, in order to be near to help at her delivery; the lamb frequently preſents itſelf croſs ways, or by the feet; and, in this caſe, the mother runs the riſque of her life, if ſhe is not aſſiſted. As ſoon as ſhe is delivered, the young lamb is lifted on its feet; at the ſame time, milking out the milk, contained in the mother's teats; this firſt milk being bad, would do much hurt to the lamb; ſo that it is neceſſary to ſtay till the teats are filled again, before it is ſuffered to ſuck: they are kept warm, and are ſhut up during two or three days, with the mother, in order that they may know her. For a few days, in order to re-eſtabliſh the ſtrength of the ſheep, ſhe is fed with hay, and barley wetted, or bran mixed with a little ſalt; the water ſhe drinks, ſhould be luke-warm, with ſome wheat flour, beans, or miſſet put into it; in four or five days ſhe may again be uſed, by degrees, to her common manner of living, and may be put amongſt the others, only obſerving not to take her too far, leſt it ſhould overheat her milk: ſometime after, when the lamb which ſucks, begins to have ſtrength, and to ſkip about, it may be ſuffered to follow its mother in the fields.

END OF THE FIRST VOLUME.

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